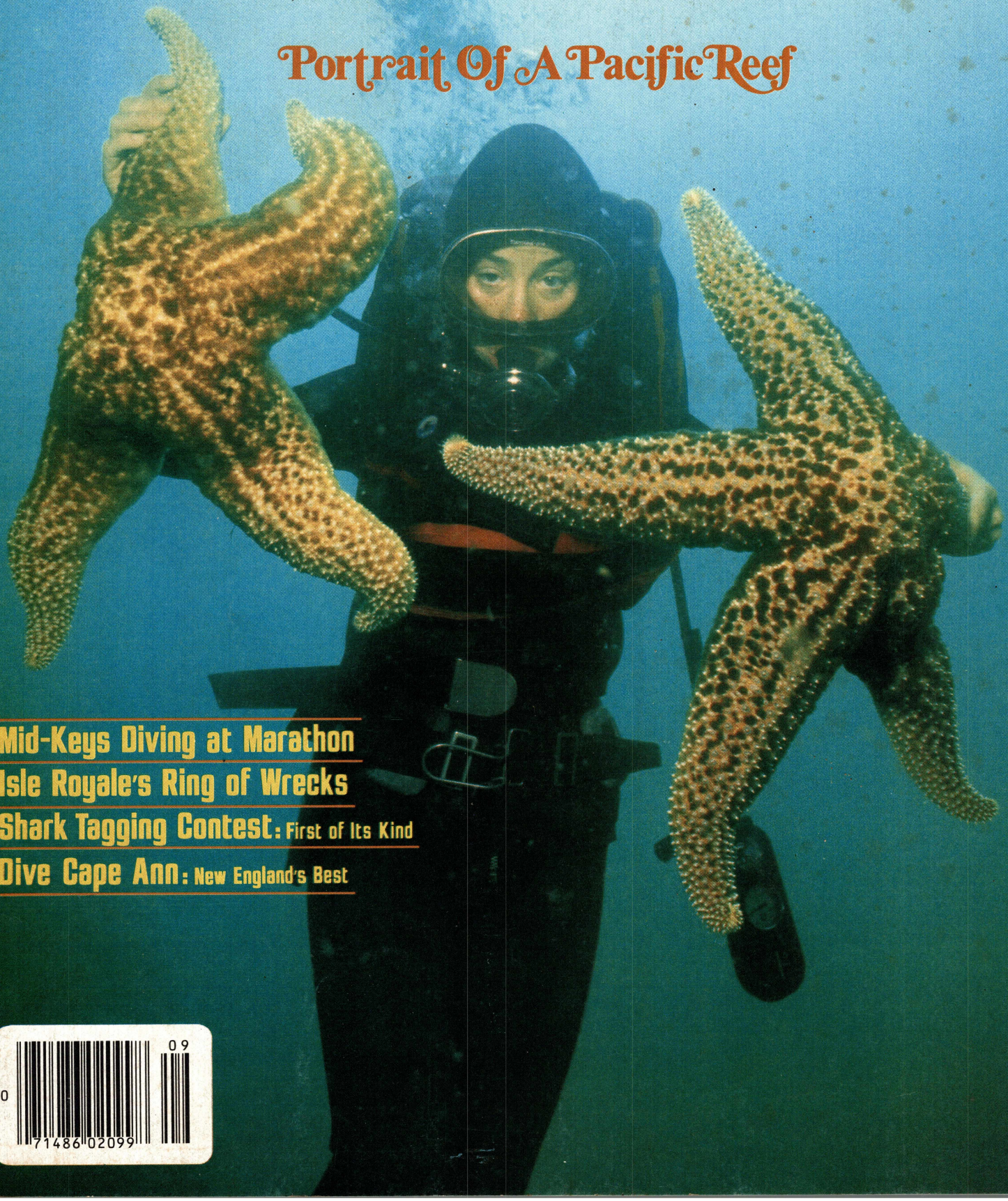
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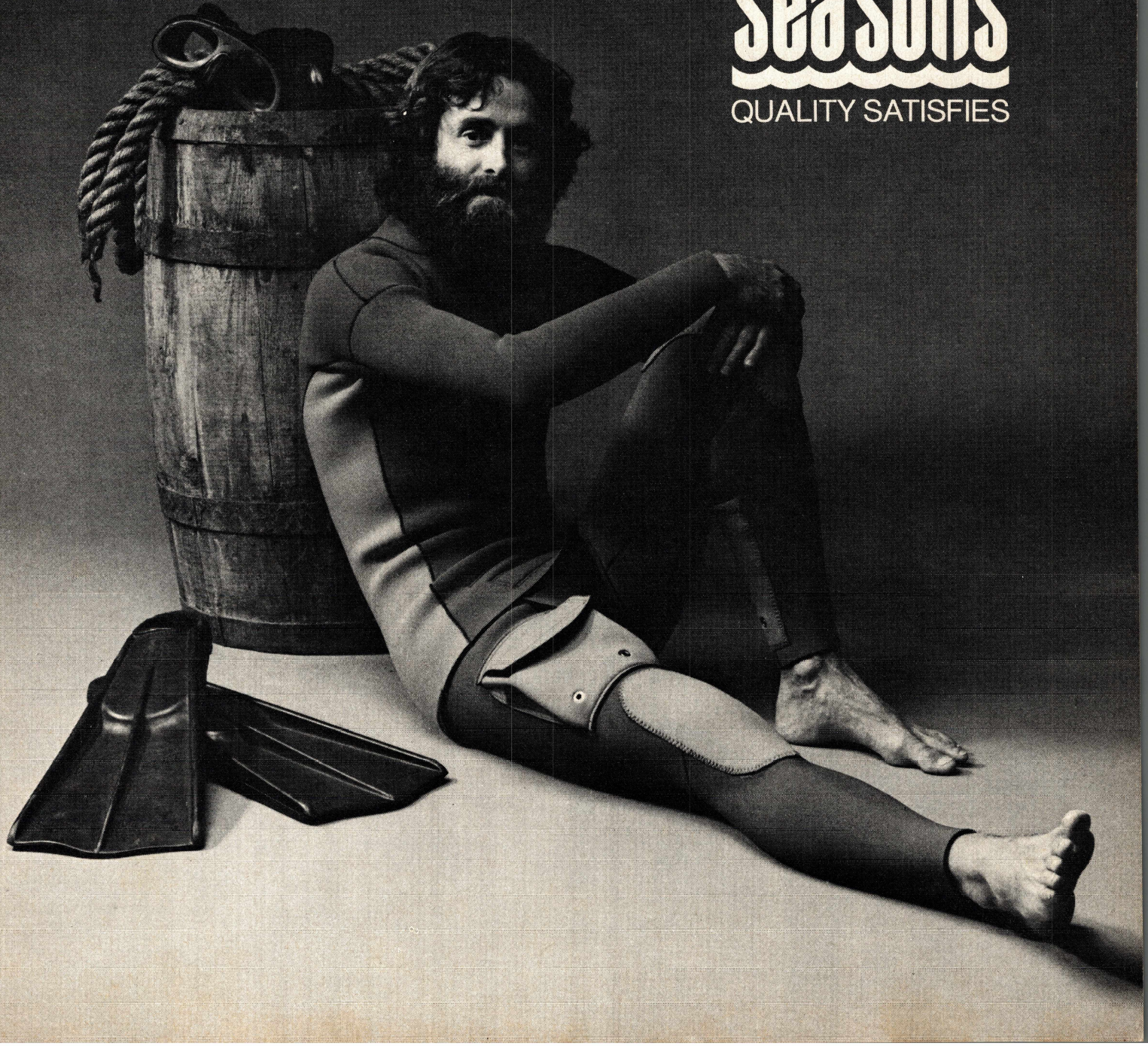
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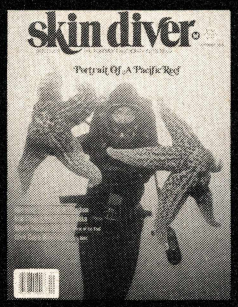


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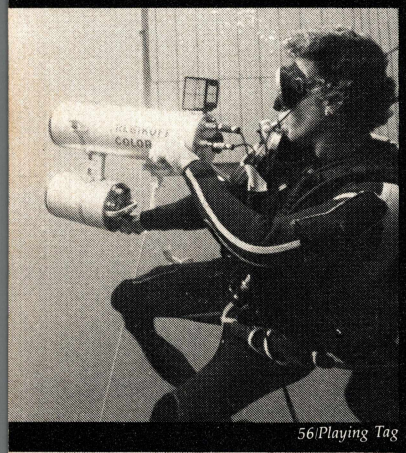
Volume Twenty-Seven *Number Nine*

COVER

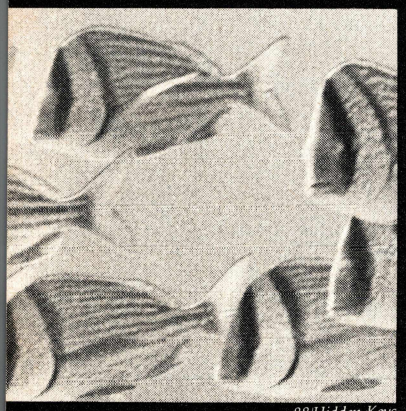
Diver Erica Evans poses with two of the leading characters in the delicately staged interaction occuring on California reefs. These giant starfish (Pisaster giganteus) *are significant predators, devouring huge quantities of mussels* (Mytilus californianus) *each day. Photography by Bob Evans.*



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Editorial

A Struggle for Identity



BY THE PUBLISHER

Ever wonder why diving isn't a more popular sport? As an outdoor activity, this marvelous sport is unparalleled in beauty, sensuous experience, thrills, fascination and continual enjoyment. To those of us who are fully involved, diving is virtually addictive and all-consuming.

Yet, only a fraction of the public understands or appreciates diving. Less than 3 percent of the population has ever tried it, and only .5 percent of the public is actively involved in the sport today. If you were to randomly stop people on the street and ask them to explain what diving means to them, you would be amazed by their answers. The general public knows more about the moon and the stars above than what divers are doing.

While television networks devote hundreds of weekly program hours to tennis, skiing, golf and ball games — diving fails to get even a mention. The new fad sports — such as hang gliding, sky diving, and skateboarding — manage to attract far more television coverage in spite of the fact that they are smaller and younger sports.

Why is it, after 25 years of steady growth and prosperity, the sport of diving remains virtually unknown? Sport commentators, and sport newswriters are still embarrassingly ignorant of this activity.

There is an answer to these questions — a very obvious answer. Diving is a non-competitive, non-spectator sport, far removed from the public limelight. It is a sport without identity and linked to a somewhat dubious image. In fact, the only time diving receives any mention in the local newspapers is when someone in scuba gear drowns. While television produces incredible sport specials on frog jumping, arm wrestling and snowshoe racing, diving is relegated to the murky depths of obscurity.

Yes, there are television shows and national magazine features about the undersea world. TV shows on the reef ecology crisis, the vanishing whales, and the plight of the dolphins are both excellent and much needed. Unfortunately, these are programs about animals and scientists — not sports enthusiasts. The same is true for the movies and TV serials made in that make-believe world of Hollywood. *Sea Hunt, THE DEEP*, and *Jaws II* may be entertaining, but they are not truly representative of our sport.

Why does diving lack a sport image? Why aren't there sport events in diving, just like those in snow skiing or automobile competitions? Perhaps it is because diving got off to a bad start. There was a time, 15 to 20 years ago, when sport diving heavily promoted spearfishing as a competitive event. In fact, spearfishing was the only form of competition in those days. Unfortunately, spearfishing was rejected by the International Olympic Committee because it involved the taking of a life. Today, spearfishing events are more shunned than ever and television networks are not willing to devote any time or coverage to such unpopular events. In a way, spearfishing has left its mark on diving and we still suffer from this enigma.

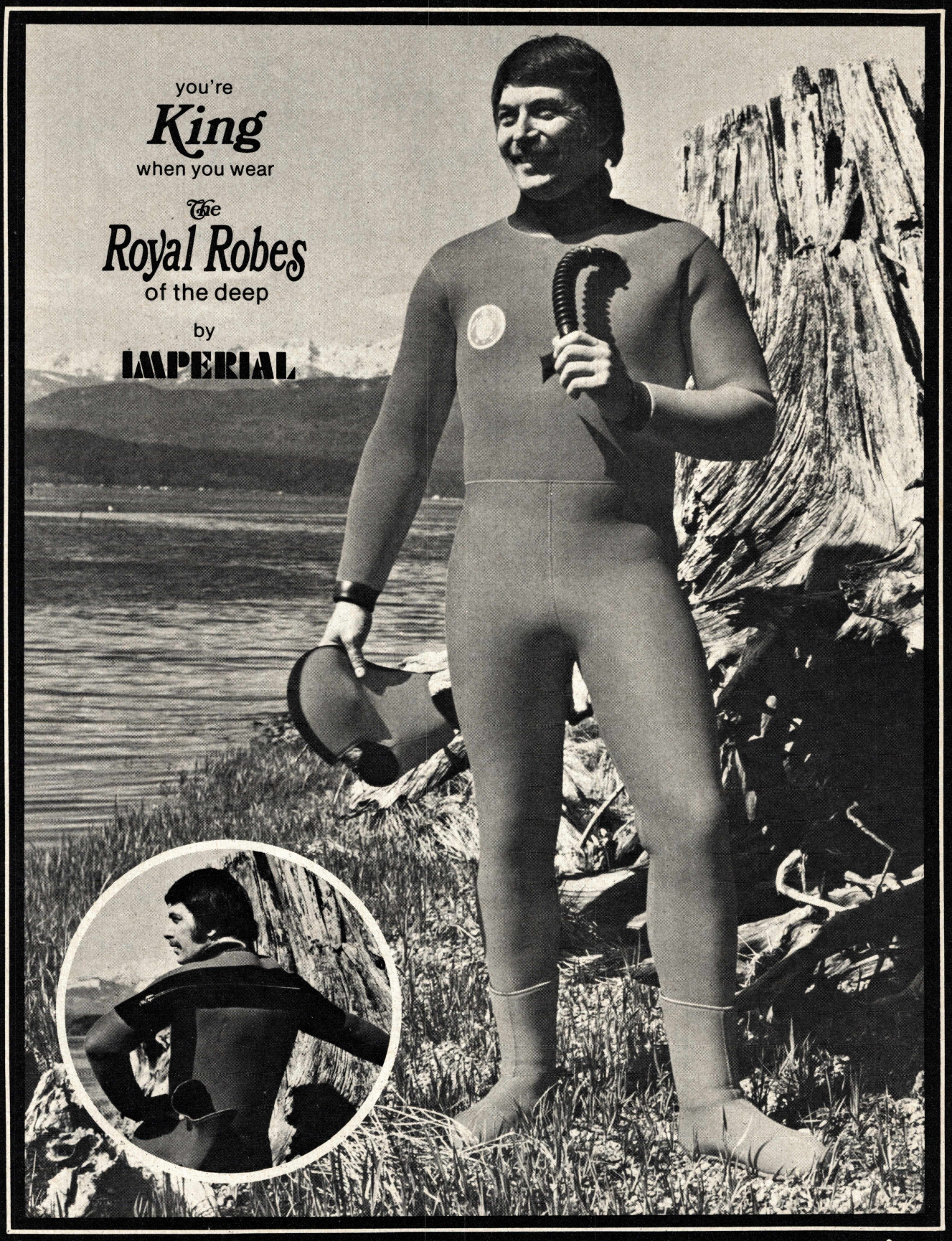
Subsequent attempts to organize competitive diving events have not been successful. Dive clubs and councils have struggled to popularize such contests as underwater navigation, swim fin races, and underwater hockey games. Most of these attempts have been badly funded and staged in an amateurish way.

If we expect sport diving to blossom into a popular water sport activity enjoyed by millions rather than a comparatively small knot of hard core enthusiasts, we must achieve a public identity. We must find a way to convey the thrill, the fascination, and the beauty of our underwater world to those millions of people who have not yet sampled this marvelous sport. We must find and develop a method — a vehicle — for communicating with those who do not yet understand what diving is all about.

There is a need today for organized sport competition in diving. Not only may it be the method for establishing our identity, it could also provide us with an opportunity for achievement. There are many fine young athletes attracted to diving each year, but these people are frustrated by the lack of challenge. There are few ways for them to achieve recognition and to excel within our sport. In many cases, they leave diving and go on to other sports in search of that personal challenge.

Fortunately, attitudes are changing both within the sport and around us. There is a resurgence of interest in the development of underwater sport competition. People in diving want more excitement and more challenge. In addition, television and the news media are most willing to lend their assistance. They also are searching for new and glamorous sporting events. Recent developments in TV camera and movie technology now make it possible to record almost any type of underwater activity as it is happening. Diving no longer need be cloaked in a watery veil of mystery.

This issue of SKIN DIVER carries a feature article about a very special event. It is the first of its kind — developed, sponsored, and promoted by CBS television. It is called the *Professional Underwater Sportsmen Competition*. As you read about this event, you may find it to be a bit farfetched, perhaps even bizarre, but it is a beginning. No doubt there will be many who will critize such an event, finding fault with its purpose or meaning. The important thing to remember is that this event may herald the beginning of a new era in this sport's struggle for an identity.



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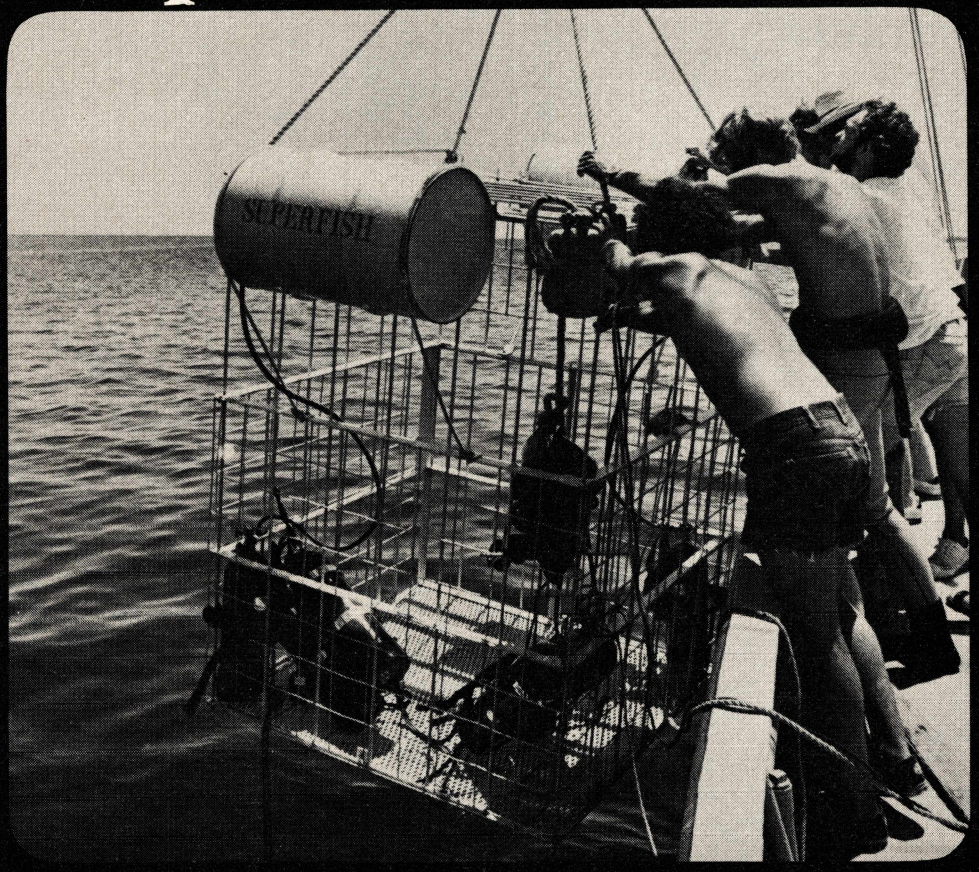
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SDM'S NATIONAL SCUBA EXAM

By Dennis Graver

Category: Dive Planning

Dive planning is often taken for granted in our sport, but many divers are unable to explain its importance or the steps involved in the proper planning of a dive. Test your knowledge of this topic by answering the following questions. Answers are on the next page.

1

The initial steps involved in planning a dive are to:

- ☐ A. Inspect equipment for proper adjustment and function.
- ☐ B. Determine the dive objective and who your buddy will be.
- ☐ C. Determine the best day for diving and the best time of day.
- ☐ D. Check the water conditions and plan for emergencies.

2

After determining where your dive will be made, you and your buddy should:

- ☐ A. Select an alternate dive site.
- ☐ B. Check the weather forecast.
- ☐ C. Discuss equipment needs.
- ☐ D. All of the above are correct.

3

The time of day you select to make a dive:

- ☐ A. Can affect visibility and other conditions.
- ☐ B. Can affect the planned activity.
- ☐ C. Can influence the choice of dive sites.
- ☐ D. All of the above are correct.

4

In order to prevent equipment problems at the dive site, a diver should:

- ☐ A. Inspect all equipment to ensure good condition.
- ☐ B. Pack all equipment using a check list to ensure completeness.
- ☐ C. Inspect and inventory equipment at the dive site prior to the dive.
- ☐ D. Both A and B, but not C, are correct.

5

Just prior to leaving home for a dive, you should:

- ☐ A. Leave information on where you are going and the expected time of return.
- ☐ B. Determine where you will be diving and the purpose of the dive.
- ☐ C. Make a final check of weather and water conditions if possible.
- ☐ D. Both A and C, but not B, are correct.

6

Upon arrival at the dive site, buddies who follow proper dive planning procedures will first:

- ☐ A. Discuss hand signals and communications.
- ☐ B. Partially suit up for the dive.
- ☐ C. Evaluate the dive conditions.
- ☐ D. Prepare for emergency situations.

7

Before entering the water for a dive, buddies should:

- ☐ A. Review communications.
- ☐ B. Select entry and exit points and the course to be followed on the dive.
- ☐ C. Discuss the buddy system techniques to be used.
- ☐ D. All of the above are correct.

8

Which of the following statements is false? Buddies should:

- ☐ A. Agree on limits for time, depth, and air.
- ☐ B. Agree before the dive on emergency procedures for loss of air supply.
- ☐ C. Have different objectives to prevent interference while diving.
- ☐ D. Be trained and prepared to handle a dive accident.

9

If a dive is well planned and conditions at the chosen site are unfavorable, divers should:

- ☐ A. Abort the dive until another day.
- ☐ B. Check conditions at the alternate dive site.
- ☐ C. Either of the above.
- ☐ D. None of the above.

10

The activity selected for a dive affects the:

- ☐ A. Choice of dive site.
- ☐ B. Equipment needed.
- ☐ C. Choice of dive buddy.
- ☐ D. All of the above.

SDM'S NATIONAL SCUBA EXAM

1

B. Determine the dive objective and who your buddy will be. Establishing the purpose or objective of the dive is an important step, because this will affect all other aspects of the dive — your buddy, the location, equipment needed, time of the dive, etc.

2

D. All of the above are correct. Select an alternate site which is likely to be divable if the primary site is not. Check the long range weather forecast. Determine the equipment needed, any special equipment, and who will supply common equipment, such as float, dive flag, first aid kit.

3

D. All of the above are correct. Time of day can affect visibility, water movement, entry and exit techniques, and more. Tides, wind, boat traffic, and angle of the sun should be considered when planning your activity.

4

D. Both A and B, but not C, are correct. If you wait until you reach the dive site to inventory and inspect your equipment, you may discover a problem which can't be solved at the site. Dive planning is intended to prevent this.

5

D. Both A and C, but not B, are correct. File a "float plan" including information on what to do if you do not return by a certain time, and make a last minute check on conditions if possible to prevent a needless trip to the dive site.

6

C. Evaluate the dive conditions. Upon arrival at the dive site, the first step is to check conditions to determine whether or not a dive should be made. If both buddies don't feel good about making the dive, pleasure should be sought elsewhere.

7

D. All of the above are correct. The buddy team needs to agree on the general pattern of the dive; how they will remain together underwater; limits for time, depth, and air; and emergency procedures for loss of air supply. They also need to be able to communicate underwater.

8

C. Have different objectives to prevent interference while diving. This is false. Having similar objectives is recommended to keep divers together and to increase enjoyment through sharing of common experiences in an area of mutual interest.

9

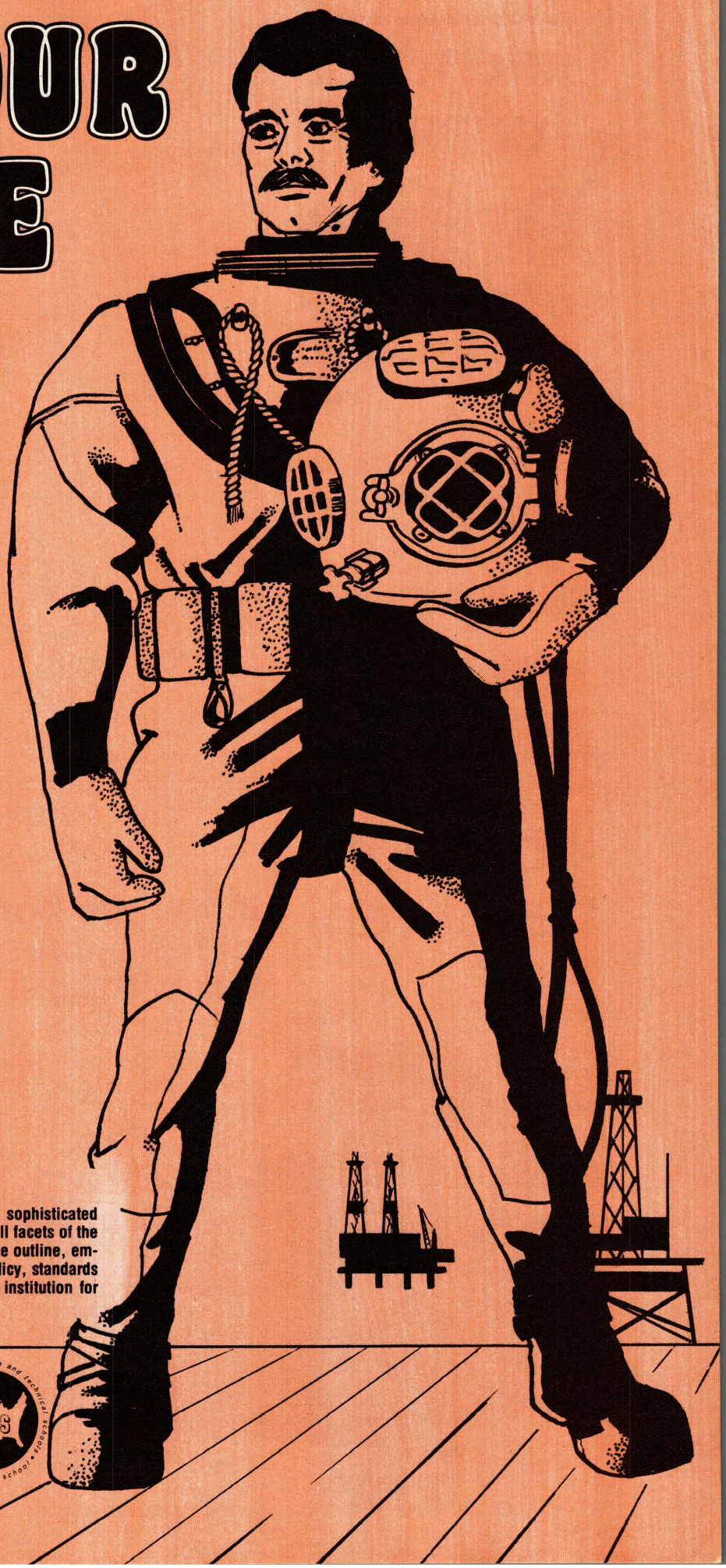
C. Either of the above. If you can't find a site where conditions are favorable for diving, then postpone the dive until another day and use the time to have fun doing something else. Make all dive experiences enjoyable.

10

D. All of the above. The activity chosen, e.g. spearfishing, determines where you will dive, what special equipment will be needed, and who you should select as your buddy. Select your dive objective first when planning dives.

Dive planning is important and can make dives much more enjoyable, but need not be a large task. By developing habits and using check lists, dives can be properly planned quickly and easily. If you are not already applying the techniques presented in this exam, try them and see the difference. Remember to always plan your dives, then dive your plan.

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Don't be mislead by commercial diving schools who claim to be best or #1 just because they have certain equipment or have been in operation X years. Anyone can make such claims, but, proving it's another matter. At D.I.T. we don't make claims. We let our reputation do that. Check us out. Compare our credentials to the others. Judge for yourself who's best qualified to train you right. It's your decision and your future.

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Underwater Forum



Oops!

Our June '78 New Gear section listed an incorrect price for the Gary Supersling. Correct price for the item is $37. Our apologies.

Salvage Permits

Concerning the Great Lakes Wreck Seeker (SDM June '78), the Michigan State Department of Natural Resources requires a permit to salvage *any* abandoned material (i.e. shipwreck goodies) from the state owned bottom lands of lakes Superior, Michigan, Huron, St. Clair and Erie, under the authority of Act #17 of the Public Acts of 1921, as amended.

There are four classes of permits:

Class I — General Sport Diver Salvage Permit: Allows the free swimming diver to salvage unattached objects without the aid of mechanical equipment.

Class II — Specified Sport Diver Salvage Permit: Allows a person to salvage specific objects by methods and under provisions provided in the permit.

Class III — Commercial Salvage Permit: Allows a commercial salvor to salvage specific objects by methods and under provisions provided in the permit.

Class IV — Scientific Salvage Permit: Allows an organization to salvage, under special permit provisions, for purposes of education or historic preservation.

Permits can only be obtained from the Law Enforcement Division, Mason Building, Lansing, Michigan 48926.

PAUL A. BEHE, JR.
MT. CLEMENS, MICH.

Fossil Facts

I read with great interest Dick Harrison's recent article Fossil Fever Hits Florida (SDM June '78). I would, however, appreciate the opportunity to clarify one slight oversight . . .

Regarding . . . *Carcharodon megalodon*, Harrison states its maximum length approaches 80 feet. . . [However] I direct you to a recent article contributed by J. F. Randall to Science Magazine, July 13, 1973, p. 169. It states, "Based on a projection of a curve of tooth size of recent *Carcharodon carcharias*, the largest fossil *Carcharodon* were about 43 feet (13 meters) long.

FLOYD F. QUINN
TAMPA, FL

Pelican Chem Lights

I liked your review of the Pelican First Aid Kit (SDM June '78), however, I did note one error. The article states that the chemical light is unavailable elsewhere but I have obtained the same light from Jensen Tools & Alloys, 1230 S. Priest Drive, Tempe, Arizona 85281. It is listed as a 30 Minute High Intensity Light and can be purchased singly (Catalog # 296B052) for $1.60 and in a 10 pack box (Catalog # 296B705) for $15.25.

ALBERT GUENZBURGER
HAWTHORNE, CA

Florida Lobster Law

Mr. Barada's statement in the June SKIN DIVER that the prohibition of taking undersized lobsters in Florida is not enforced leaves me confused and disappointed.

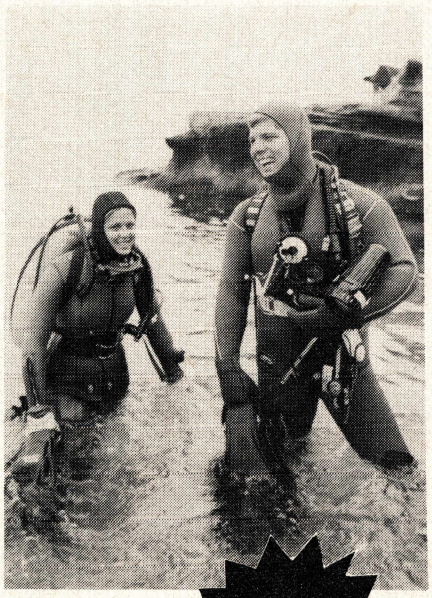
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does not have enough officers to check every boat every day, hundreds of arrests are made each year and many people introduced to Florida's jails would refute his statement.

The maximum fine of $500 is being applied at an increasing rate and it would be a disservice to your readers to unintentionally mislead newcomers to the state to take the Florida lobster law lightly.

COL C. A. WILLIS, Director
Division of Law Enforcement
Florida Dept. of Natural Resources

SDM's For Sale

I have a 20 year collection of SKIN DIVER Magazines starting August, 1956. Some years have been placed in hard cover binders.

I would like to sell the complete collection (F.O.B. Toledo) for the best possible price as soon as possible.

GLENN R. WESTER
3501 Upton Ave.
Toledo, Ohio

Shipwreckers

I assume your environmental editor Bill Barada was attempting to portray professional and private treasure divers in a sympathetic light in Shipwrecks and Treasure (May 1978). Despite (or partly because of) his efforts, the picture I get of such divers is very, very negative.

Barada's assertion that "treasure hhunters played a vital role in shaping America's history" is pure fantasy. He compounds this fantasy by the illogical and incorrect equation of the California 49'ers with the early wreckers of the Florida Keys and, ultimately, with modern treasure divers. At best this is a naive interpretation of American history, at worst it is a gross distortion.

It certainly was individuals, rather than governmental agencies, who faced the hardships, confronted the dangers, solved the problems, etc., of underwater treasure hunting. Not for love of country, or history, either. They did (and continue to do) it for money — salable treasure . . . particularly in the form of gold bullion . . .

I certainly do agree that we need more and better cooperation between private treasure hunters and government regulatory agencies. But this can't be done through regulations, unfortunately. As he clearly states, these divers are basically a lawless breed who will "work fast, at night," just like the pirates and wreckers of a century ago . . .

I suggest you consider adopting, publishing, and abiding by a resolution that condemns the destruction of the material and historical records of the past by the plundering of all archaeological sites, above and below water, both in the United States and abroad.

JOHN A. GIFFORD
DULUTH, MN

Spearfishing

I'd like to compliment Ron Merker on his article, Beginner's Guide to Spearfishing.

I, myself, partake in both spearfishing and U/W photography. Therefore I felt it important to remind divers to catch only what they themselves can eat, and not supply fish for all of their friends, too.

COLE PRICE
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Baja Wreck Diving

I would like to hear from divers having an interest in wreck diving in the Sea of Cortez and the Pacific side of Baja.

Several of us from the Bay Area would like to correspond with divers having experience in this area. We are planning several trips.

WALTER E. PETERSON
Box 696
Diablo, CA 94528

Miracle Sun Gel

. . . While on a trip (to Florida) I got sun poisoning or heat rash, causing small bumps and itching. Even with the screening lotions, it continued. By chance I stopped at a fruit stand for fruit and ended up with the best medicine I have ever used for sunburn — a leaf

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from an aloe plant . . . Small slices were cut off, then split to expose a type of clear gel in the middle. This gel was rubbed over the affected area and, to my amazement, stopped the itching and the bumps vanished. This treatment was repeated with continued good results.

I managed to find a baby aloe plant and brought it home. It has so far grown from a two-inch diameter plant to a two-foot diameter and has produced six new ones within two years . . . I wish to know how to prepare the gel for future use. I have removed leaves and skinned them, putting the gel in a jar and refrigerating it. With age it smells spoiled (continues to work, though). I would like to make some kind of lotion or salve out of it, rather than just watching the leaves die off. If you know how to prepare this . . . so that it can be stored for future use, please inform me.

LANNY J. WAGNER
1900 Choctaw Circle
London, Ohio 43140

Diving Mother

What about pregnancy and diving? Do they go together? I received my C-card on the first week of April and two weeks later I received my M-card (expectant mother). Being a very eager scuba diver I was determined to continue my diving for as many months as I possibly could. I was overwhelmed, to say the least, when I learned I was pregnant but far more upsetting was the fact that I was unable to find someone with knowledge as to whether I could or could not continue diving safely. If so, for how long and would my unborn child be affected by depth? And so my summer of apprehension began.

Every opportunity that arrived I was quick to put on my gear and into the water I went. . . At the end of seven months I took one last dive and decided I'd better call it quits. I made this last dive my first night dive. By the time I geared up I was pretty exhausted. My buoyancy compensator straps didn't want to settle properly around the bulge in my tummy. I had to add four pounds of weight to my weight belt. My single tank felt heavier than usual and it seemed as though my flippers had multiplied. "Awkward" is the only word I can find to describe that last dive.

Reluctantly I temporarily set aside my scuba gear. Just two months later I gave birth to the most beautiful, healthy baby, 7 lbs., 2 oz. Because I felt sure someone from above had seen him through, I named him Christian.

This story however does not end here. I swear he almost came equipped with flippers. His favorite toys? A stuffed shark and a little gray dolphin. His favorite book? SKIN DIVER (he likes to look at the pictures of divers and fish). His favorite food? Well, he won't touch a piece of seafood. Coincidence? Maybe!

. . . I would appreciate anymore knowledge on this subject and would be delighted to answer any questions regarding my own experience.

SONDRA ANNARUMO
329 Fourth St.
ELLWOOD CITY, PA. 16117

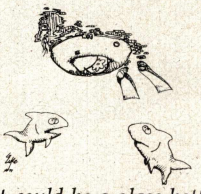
Alabama Dive Shop

Concerning Diving The Top Of Alabama in the May '78 issue of SKIN DIVER . . . a new dive store/school has opened since the article was written.

I am the diver pictured with the bottles and am in partnership with Frank Coseglia. Our new professional store will have regular trips planned and a large portion will be diving for Civil War and Indian artifacts.

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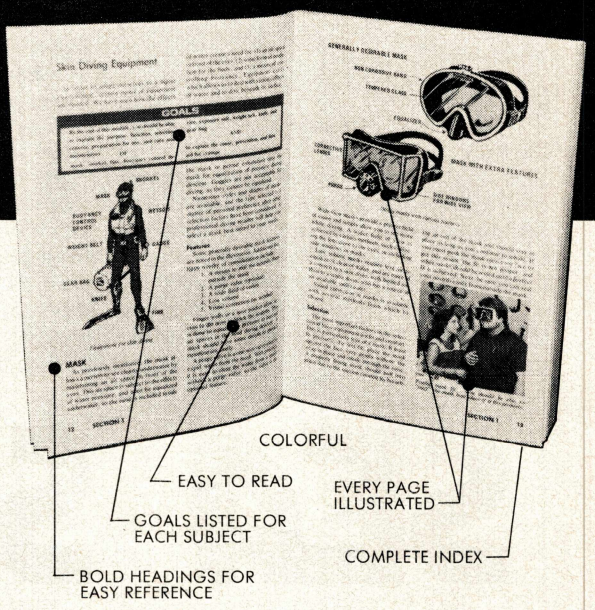
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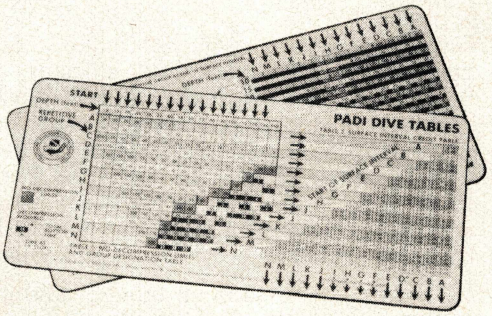


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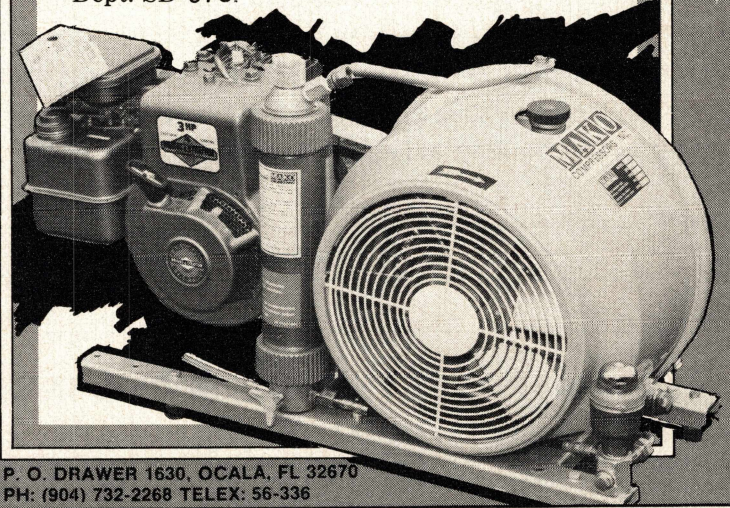
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The Need for CPR

BY GERARD R. STERLING AND BRUCE A. COHEN

What would you do if a friend or a dive buddy suddenly lost consciousness? Would you stand there helplessly waiting for help? The answer would be no if you had taken a class in CPR — Cardiopulmonary Resuscitation.

The American Heart Association reports that 500,000 deaths annually occur from heart attacks alone, mostly in the 55 and up age bracket. But people of all ages, including infants, can face sudden death from a fall, from an electric shock, and from severe allergic reaction to insect bites or medication. Add to these the thousands who lose consciousness from smoke inhalation, drug overdose, or while swimming or diving. Even a fainting spell can be fatal when someone collapses in such a position as to block air from the lungs and brain.

That's when the CPR trained family member or passerby can be the lifesaver. The American Red Cross and the American Heart Association state they would like to see one such person in each home. Because, merely the first, simplest step in CPR — tilting the head backward — might have erased some of those grim fatality statistics.

Exactly what is cardiopulmonary resuscitation, besides being a medical-term mouthful? Put most simply, it's first aid for a person whose lungs and/or heart have abruptly stopped functioning. The victim is "clinically" dead, but actually has from four to six minutes before "biological" death. Just one or all of the ABC's of CPR may save that life:

A = Airway. Open it up.

B = Breathing. Start mouth-to-mouth resuscitation.

C = Circulation. Circulate the blood by means of external cardiac compressions of the chest.

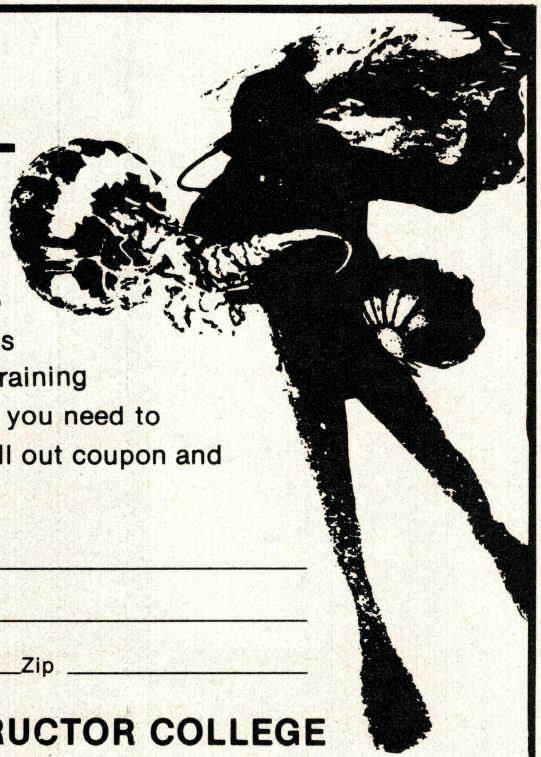
You don't need complicated medical training to administer CPR. Local heart associations, Red Cross chapters, and some adult education programs now sponsor CPR courses ranging from six to twelve hours in length. Training includes a film, a lecture, demonstrations using life-size mannikins with supervised practice on them, plus a quiz on pertinent points covered. Upon successful completion you are awarded a Basic Resuscitator Certificate. Dive clubs can offer such courses as part of the continuing education program for their members. Furthermore, where there are seasonal limits on diving, a CPR course can be especially useful in terms of keeping dive club members active during long winter layoffs.

Supervision by qualified instructors is necessary to ensure that proper skills be learned correctly. Indeed, with proper instruction, it's not difficult to learn. Trainees age 12 to 80 have received certificates.

For information on the nearest CPR courses, contact the local chapter of the American Red Cross, Heart Association or Rescue Squad. A few hours of your time may possibly save a life, or save an individual from being a cardiac cripple for the remainder of his life. What better example of the buddy system can there be?

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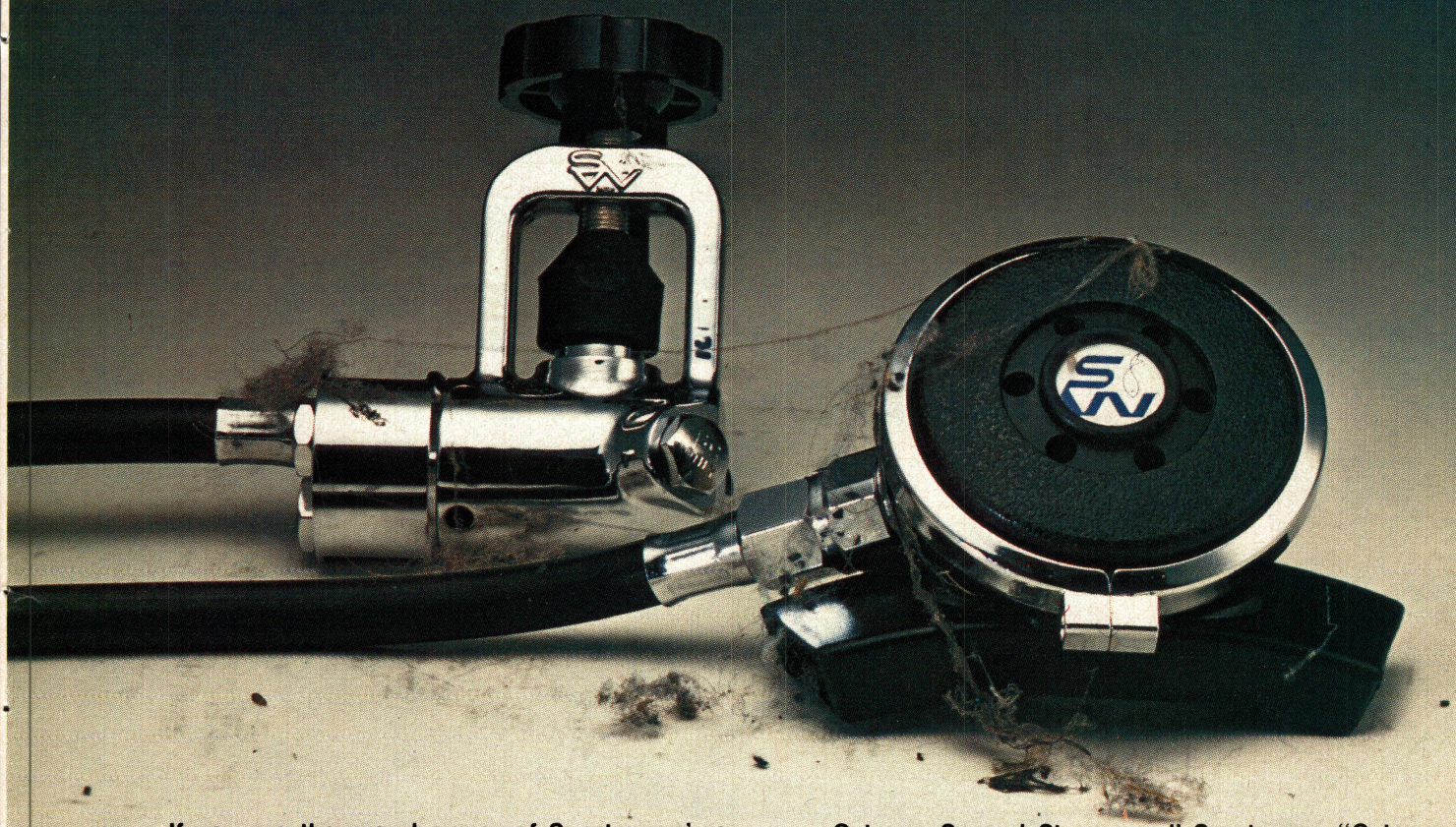
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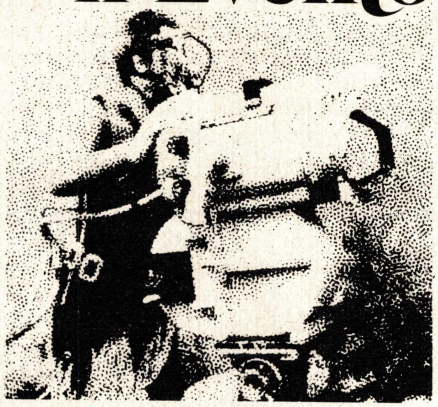
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September 9
Vision 360—Int'l Diving Symposium, State University College, Buffalo, NY (Contact: Dallas Edmiston, Vision 360, 185 Forest Hill Dr., Williamsville, NY 14221)

September 16
Underwater Photography Seminar, John Hancock Hall, Berkeley St., Boston, MA, noon. (Contact: Fred Calhoun, PO Box 291, Back Bay Annex, Boston, MA 02117)

September 16
NAUI Underwater Film Review, Fall Edition by James Dutcher, John Hancock Hall, Berkeley St., Boston, MA, 8 p.m. (Contact: Fred Calhoun, PO Box 291, Back Bay Annex, Boston, MA 02117)

September 20
Entry deadline, 8th Innerspace Pacifica Film Festival Photo Competition (Contact: Doug Wallin, 525-5 Pepeekeo St., Honolulu, Hawaii 96825)

October 1
16th International Underwater Photographic Society Film Competition deadline (Contact: Underwater Photographic Society, Box 7088, Van Nuys, CA 91409)

October 6-8
Great Lakes Dive-In, Lake Geneva, WI (Contact: Aqua Center Inc., 717 Morton Ave., Aurora, IL 60506)

October 21
Women & Diving Conference, Wellesley College Science Center, Wellesley Mass. Sponsored by Aquawoman NAUI (Contact: Valerie Costelloe, East Coast Divers, 213 Boylston St., Brookline, MA 02146)

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Medifacts



BY CHARLES V. BROWN, M.D.

THE DIVER AND THE DOC

No question is too large or too small to be tackled by our stalwart medical consultant, Dr. Charles V. Brown. And, this month, our series continues with Dr. Brown's answers to a variety of questions submitted by readers.

MYSTERY HIT

A diver in Smyrna, Georgia, is at a loss to understand why his wife was stricken with severe spinal decompression sickness. Her dive was short of the no-decompression limit by at least ten minutes, and her ascent rate did not exceed one foot per second. She was in good health, and active in tennis and jogging. Two physicians familiar with dive medicine examined her and could not supply an explanation.

Answer: If none of the usual predisposing factors for decompression sickness were present, I'd suspect a right-to-left shunt. That's a shorthand way of saying some venous blood reaches the arteries without first going through the lung's capillary bed. The shunt could be a hole in the wall between the right and left heart chambers, or a vessel in the lung that by-passes capillaries. Venous bubbles, normally filtered out by the lungs, could thus enter the arterial side of the circulation and cause bends hits.

Two other theoretical possibilities come to mind. A deep bounce dive made with silent venous bubbles already present could shrink them enough to get through the lungs, and during ascent they could re-expand and block tiny arteries. Or an over-zealous Valsalva maneuver (for ear clearing) could make venous blood flow backward into small vessels in the spinal cord, carrying in bubbles which would then adhere and block circulation. These last two mechanisms have not been proven for humans, but animal experiments suggest that they can occur.

SUDAFED

Peter Tryde of Hong Kong has trouble clearing his ears. He's heard of Sudafed and wants to know the effects and the recommended dosage of this drug.

Answer: Ephedrine is a drug long known to constrict nasal blood vessels and so reduce congestion. But it also stimulates the heart and nervous system and raises blood pressure. Clever chemists discovered that individual molecules of ephedrine come in two forms, identical except that structurally they are mirror images of each other. They separated the two forms and found that one had a far less effect on the heart, while it still seemed to decongest a stuffy nose. This form, called pseudoephedrine, is sold under the trade name Sudafed. Many divers have used it and have reported easier ear clearing.

Sudafed normally starts to work 15 to 30 minutes after taken. Its effect peaks within one hour and lasts for several hours. While most divers notice no significant side effects at the recommended dose of 60 mg, some sensitive individuals do report stimulation.

The main danger in taking any decongestant before diving is the chance that it might favor heart dysrhythmias. The risk to most people is probably very slight; but it gets bigger in certain situations, including fatigue, low blood sugar (too long without eating), and illness. I prefer not to mix decongestants with

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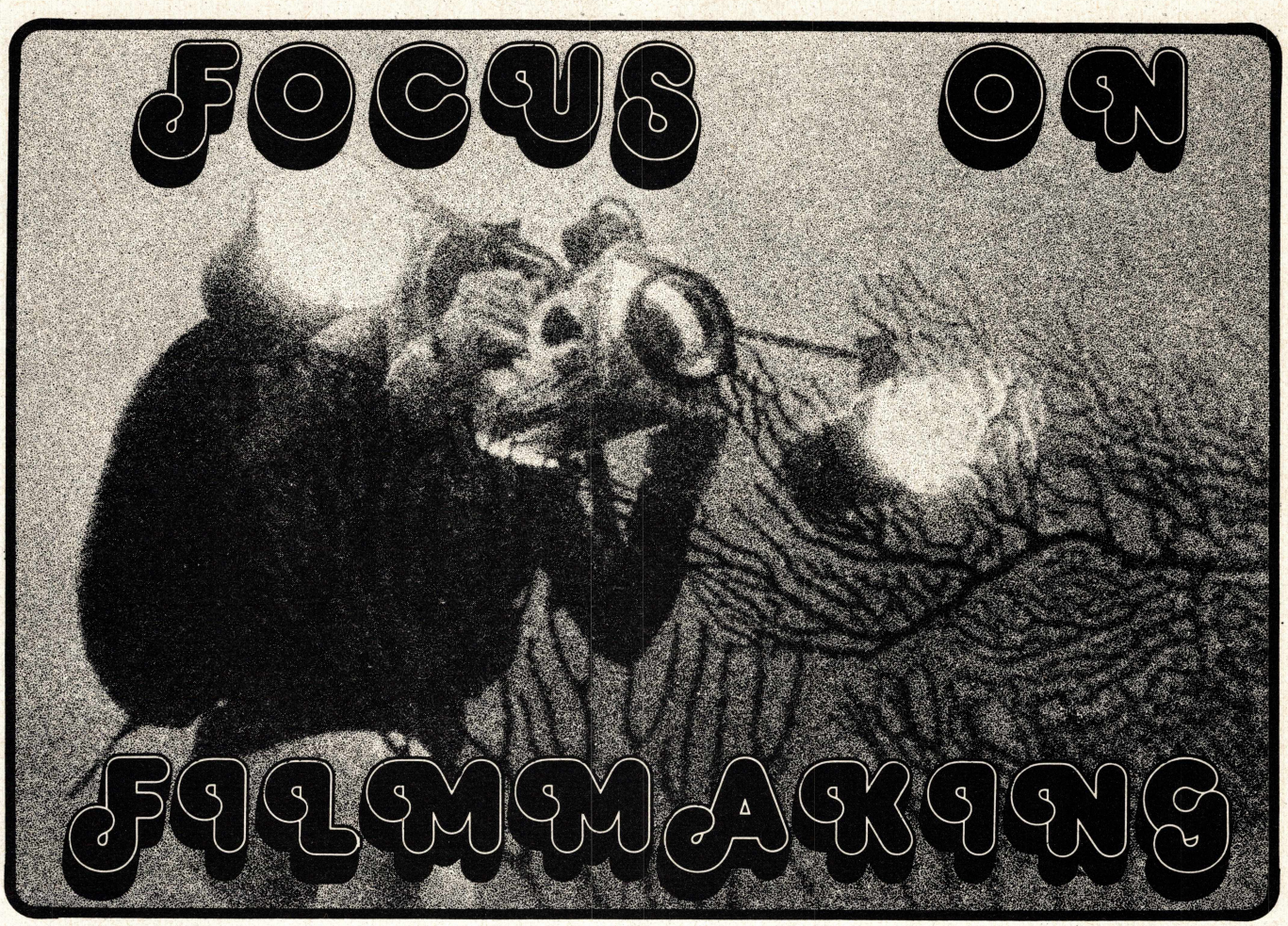
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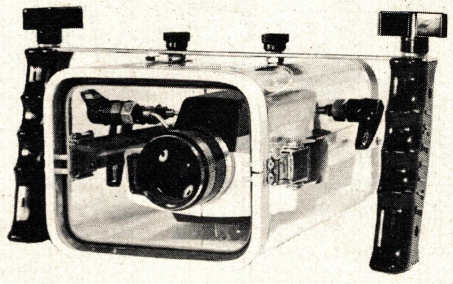
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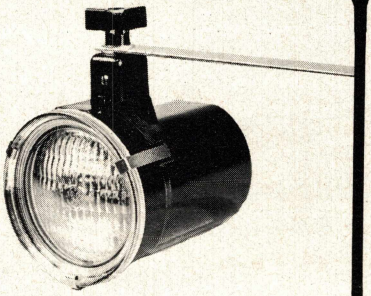
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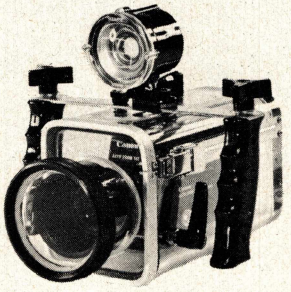
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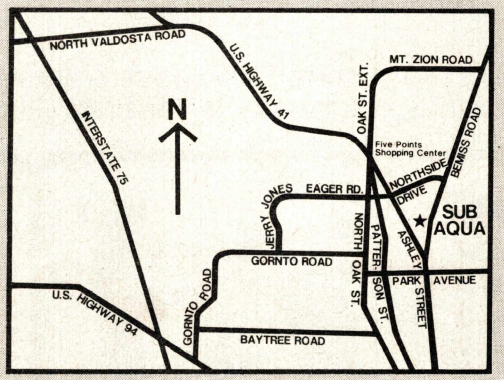
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MEDIFACTS

other stimulants, like coffee, and to discourage their use by anyone with a history of heart palpitations. A person with high blood pressure should not use them unless cleared by his physician.

BLEMISHED LUNGS

Dr. John Garvis of Salem, Virginia, has advised a friend whose lung x-ray showed some emphysematous blebs to give up diving. He requests a discussion of how this condition relates to diving and snorkeling.

Answer: I concur fully with your advice. Blebs (air pockets on the lung's surface) are time bombs with unknown fuse settings. They often rupture, causing pneumothorax, when a person is at rest or just walking. Many factors can retard the free venting of air from the lungs during ascent from a scuba dive. These include mucus blocks, swelling, spasm involving small airways, and transient closure of the large airway as by swallowing. The result would be expansion stress on the blebs, making them more likely to rupture U/W than on land.

I see no reason why snorkeling or breath-hold diving would make a bleb more likely to pop, but if it should perversely choose that time to do so, certainly pneumothorax in the water would be more dangerous than on land.

Your friend has three alternatives: 1) have an operation to prevent lung collapse; 2) accept an unmeasured but definite risk; 3) hang up his fins.

TAMPON SQUEEZE?

Judy P. of Augusta, Arkansas, is concerned about the safety of wearing a tampon when diving during a menstrual period. She has heard that the pressure would drive it inward.

Answer: What you've heard is nonsense. The vagina, unlike the external ear, is only a potential space and normally harbors no air, so is not affected by squeeze. Air trapped within a tampon would merely cause it to shrink while at depth, not to be driven inward. Wearing a tampon when diving is quite safe.

COLD ALLERGY

A Los Angeles instructor has read that cold allergy is a problem for some divers and seeks an explanation.

Answer: Allergy to cold does occur, though mercifully not often. Strictly speaking, it is not even a true allergy. In the development of a true allergy, some sort of foreign material, called an antigen, comes into contact with one's tissues. The tissues "feel" it biochemically, and then manufacture special soldier molecules, called antibodies, to destroy or at least neutralize it. If that antigen again contacts the tissues, the antibodies attack it. An unfortunate side effect of the battle is that chemicals such as histamine are released. They produce allergic reactions.

In certain sensitive people, cold precipitates a reaction that mimics allergy. Vessels in the skin dilate and fluid leaks out, producing either generalized swelling or raised, itchy patches called urticaria, wheals, or hives. Stuffy nose, wheezing, cough, and shock may also occur. The mechanism is not fully understood, but it is known to involve the release of histamine from mast cells in the skin. In perhaps half the cases, the disorder seems to be hereditary, and in a few it reflects an underlying disease.

Most cases do not respond to adrenalin, antihistamines, or steroids — the things that control most allergies. Many, however, do respond to desensitization — that is, exposure to gradually increasing degrees of coldness over a number of months. If this fails, the afflicted person must simply avoid cold. That would rule out diving in any but tropical areas, unless one had a very effective insulating suit.

Cold can also devastate a few people who are sensitive in other ways. Those with Raynaud's syndrome can get such intense vasoconstriction in the fingers that gangrene becomes a threat. Those with overly sensitive nasal membranes suffer congestion that interferes with ear and sinus clearing. Others may get heart rhythm disturbances or spasm of coronary arteries with angina pain. People with underactive thyroids don't cope well with cold. Any evidence of cold intolerance deserves a thorough medical investigation.



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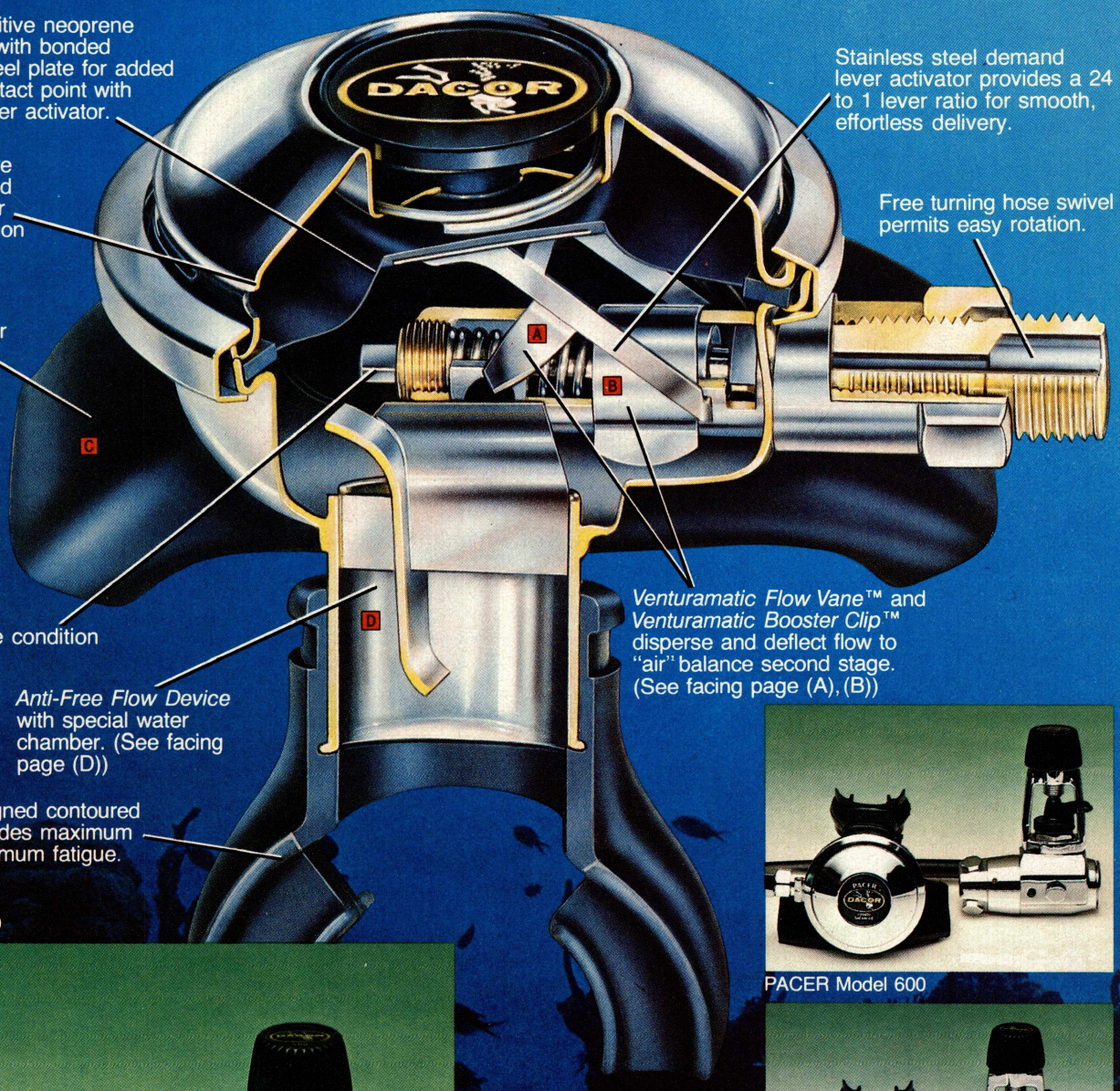
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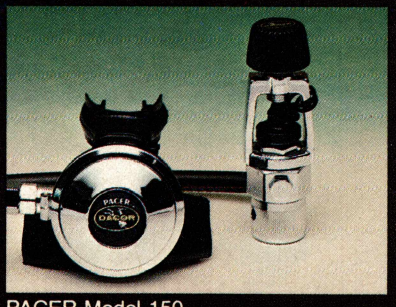
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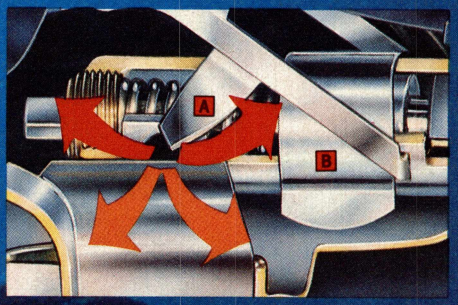
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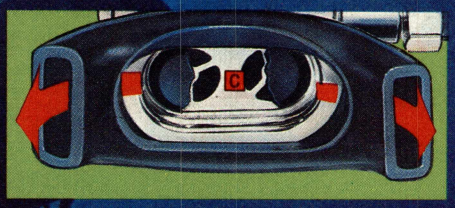
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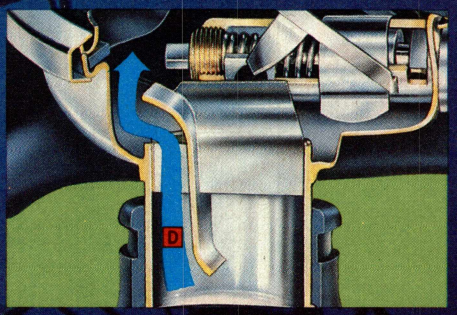
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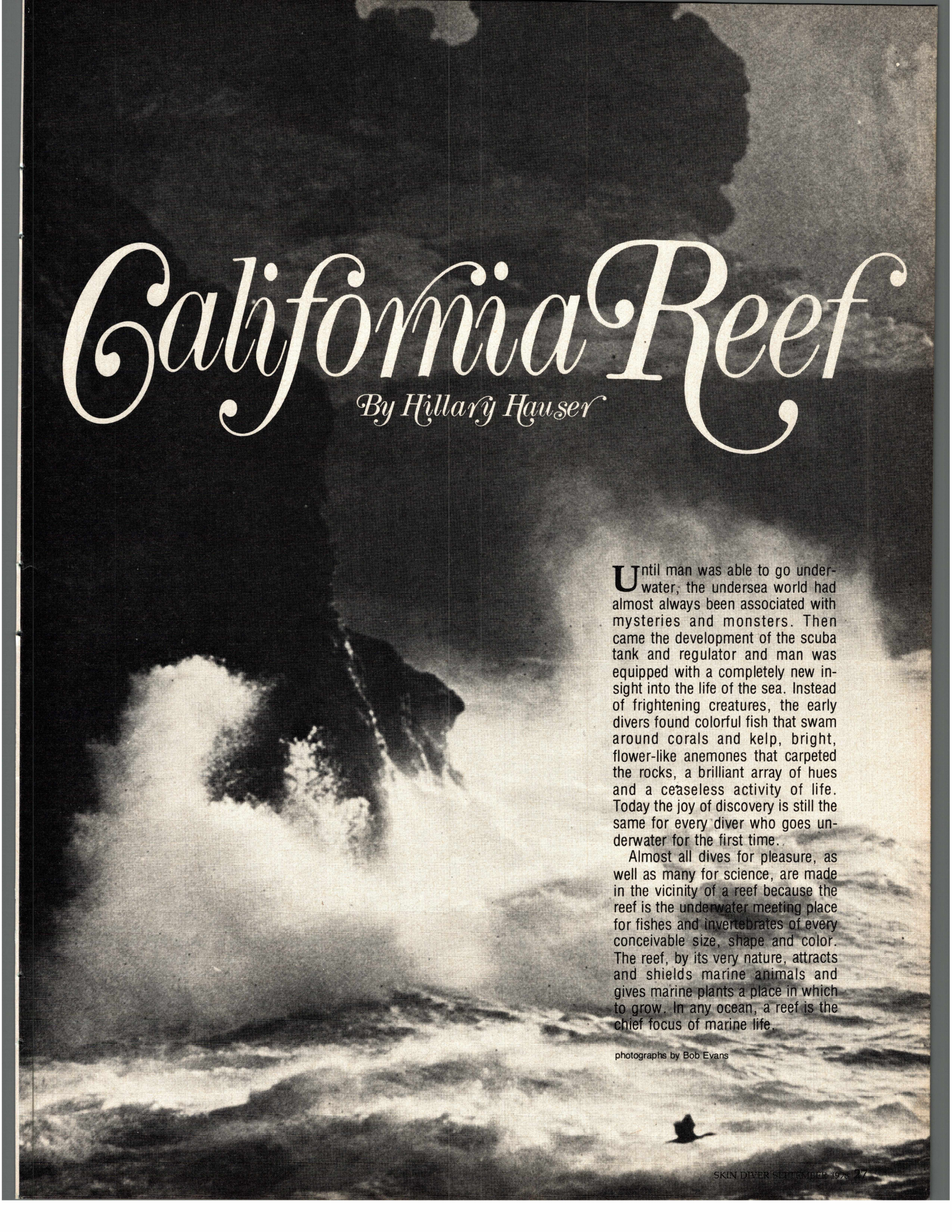
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California Reef

By Hillary Hauser



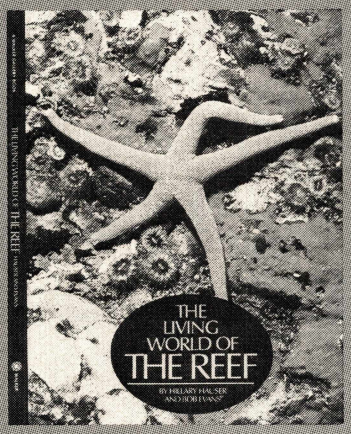
Until man was able to go underwater, the undersea world had almost always been associated with mysteries and monsters. Then came the development of the scuba tank and regulator and man was equipped with a completely new insight into the life of the sea. Instead of frightening creatures, the early divers found colorful fish that swam around corals and kelp, bright, flower-like anemones that carpeted the rocks, a brilliant array of hues and a ceaseless activity of life. Today the joy of discovery is still the same for every diver who goes underwater for the first time.

Almost all dives for pleasure, as well as many for science, are made in the vicinity of a reef because the reef is the underwater meeting place for fishes and invertebrates of every conceivable size, shape and color. The reef, by its very nature, attracts and shields marine animals and gives marine plants a place in which to grow. In any ocean, a reef is the chief focus of marine life.

photographs by Bob Evans



The backbone of a temperate Pacific coast reef is usually the kelp bed. The towering stalks of this giant brown seaweed (Macrocystis pyrifera) *form a sheltering forest for fish and invertebrates.*

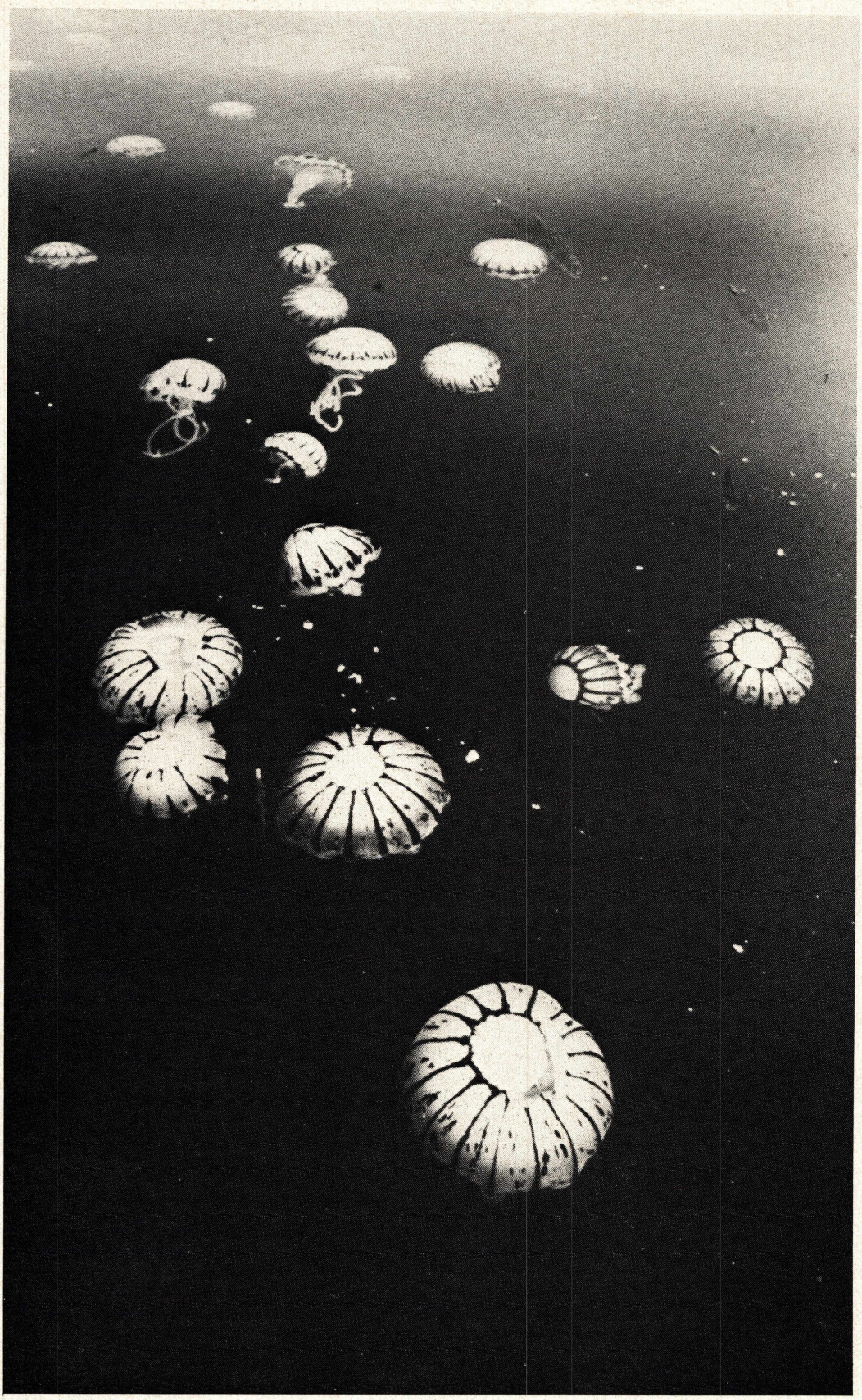


This article has been excerpted from the new book, The Living World of the Reef, *by Hillary Hauser, with photographs by Bob Evans and is reprinted with the permission of Walker Publishing Co., Inc., New York. The book is an up-close view of life on a California reef – underwater and topside – and features over 180 photographs, 32 full-color pages, and a scientific identification guide to animals and plants. Available from La Mer Bleu Productions, 28 Anacapa Street, Santa Barbara, CA 93101 (paperback $7.95, cloth $12.95).*

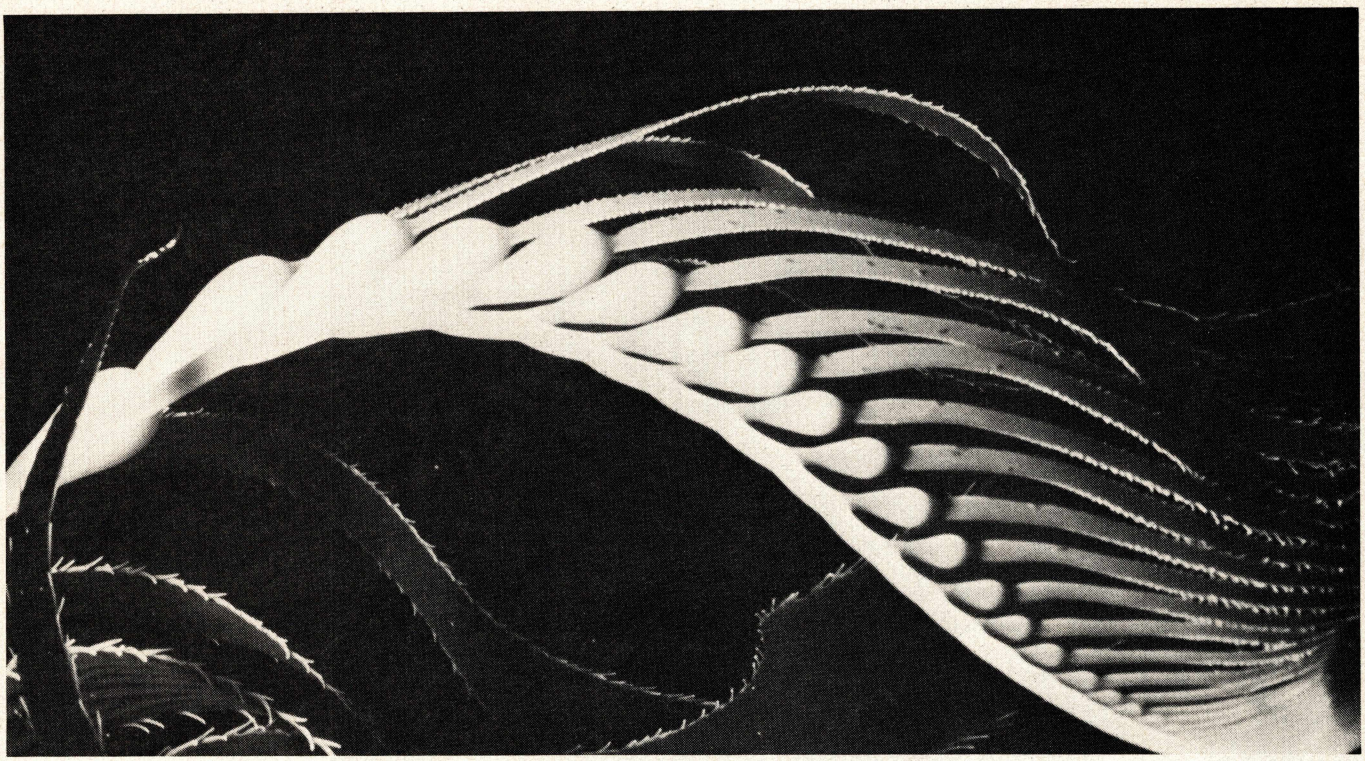
On this ocean-fed, undersea haven every living thing is interrelated. A reef, therefore, is a perfect illustration of an ecosystem, a word meaning a system in nature in which everything is interdependent. From the tiniest plankton to a five-pound fish, from minute algae to seals and sea lions, all these living organisms benefit from the existence of each other. Remove a seemingly insignificant form of life from the reef and the whole system may go out of kilter.

This vital interrelationship of life is best understood by what is known as symbiosis. Symbiosis, or the living in union of different organisms, is the way of life on a reef. In this world, interacting organisms benefit each other very specifically and in so doing create the reef community. Such symbiosis is found, for example, in certain fishes that are immune to the sting of jellyfish. These fishes take shelter in the jellyfish's tentacles, thereby baiting a trap for other fish. When the jellyfish eats its prey, the guest fish shares in the spoils. In another instance of symbiosis, fishes with troublesome parasites allow smaller fishes to pick them off. The pest-ridden fish gets rid of its problem, while the cleaner fish gets a free meal. In yet another example, some crabs pick sponges and seaweed off the reef and place them on their backs for camouflage. The crab is then hidden, while sponges and seaweed enjoy a more mobile existence and, probably, a better food selection.

Even the most casual, untrained diver can observe and recognize the interactivity of animals and plants on a reef. To observe, to absorb, to float quietly through water as an outside viewer — this is what going underwater is all about. Firsthand observation has a way of clarifying much of the science and terminology of life in the sea. One begins to realize that animals and plants are classified by their biological particulars and that within specific classes and groupings animals behave in a certain way. Take, for example, the term cnidarian (a term recently substituted for coelenterate), which may have no meaning until one learns that cnidarians are simply animals whose bodies form a small sac with a single opening surrounded by tentacles, which usually sting. So, this classification includes jellyfish, anemones, hydroids and corals. If a diver looks at coral very closely, he sees little



Purple striped jellyfishes drift through the open ocean like miniature parachutes. Because they are perpetual wanderers, with no real power of swimming, they are classed as permanent plankton.



California's magnificent submarine forests are created by kelp plants which are anchored to the bottom by holdfasts. Gas filled bulbs (pneumatocysts) float the leaf-like blades to the surface where they undergo photosynthesis. Kelp can grow two feet in one day and reach a length of 200 feet.

polyps with their tentacles out, feeding. A closer look then reveals that these tentacles sting and paralyze passing plankton, which is caught and eaten by the animal polyps.

We have chosen to illustrate the reef phenomenon by focusing on the waters of California. For one thing, it is our back yard. But for another, more important reason, the marine life of any California reef — whether offshore or around an island in the channel, whether in the towering forests of giant kelp or in the tidepools — is unique. The California coast offers a wide variety of underwater environments. There are warm water areas next to cold water areas, the result of great geographic variations in the terrain of the ocean bottom as well as unstable ocean conditions and water temperatures that have existed in the Pacific for some 2000 years.

The animals and plants of a California reef are quite unlike the animals and plants found in the Caribbean. The shallow depths of the vast Little Bahama Bank, for instance, allow more sunlight to filter through the seawater over a greater area. Thus, corals and plants grow more profusely between the patches of sand, and reef fishes have miles of shelter and grazing ground. Off California the contour of the sea bottom is much more varied, and reef communities are correspondingly more isolated from each other. Then, too, deep, dark waters are a tougher environment for plant and animal growth because photosynthesis, the process upon which all living things depend, is directly associated with the amount of sunlight available. There is not much sunlight at the bottom of some of California's underwater canyons, but plankton flourishes in cold water. In fact, the greatest concentration of plankton in any part of the world is found in the polar seas of melting ice. Since plankton is the basis for almost all marine life, wherever plankton abounds, marine life abounds. For this reason, the temperate and cold waters of California are very productive and rewarding to investigate.

By focusing on an individual reef, one can glimpse a microcosm — a world in miniature — which illustrates and embodies the common principles applicable to ocean life everywhere. Except for the particular species we describe, the reef, as we talk of it, could be anywhere in the world. Though fishes and invertebrates of the world may be called by different names, they are all classified under the same families or groupings, each group containing individuals that have similar body functions and habits. Therefore, the diver who learns that the bright orange California garibaldi (*Hypsypops rubicundus*) is a damselfish (family Pomacentridae) can expect this temperate water fish to have the same habits as the tropical damselfish of the Bahamas; it is territorial, its eggs are guarded by males during the breeding season and its young are covered with bright blue, iridescent specks.

The total picture of life on a reef is incomplete without a look at those animals that use the reef above water for resting and breeding, yet draw their sustenance from the sea. Mammals, such as sea lions and elephant seals, are important participants in the life of the reef; they feed on fish and crabs, swim about the rocks and kelp, and haul out on dry rocks or sand. Sea birds also depend heavily on the ocean for food, and pelicans, gulls and cormorants can be seen any day of the year diving for fish that venture too close to the surface. Since these surface reef dwellers contribute significantly to the entire life cycle of the sea, no picture of the world of the reef is complete without them. From open ocean to its bottom of sand and mud, from the busiest underwater community to shallow tidepools — wherever plants and animals interact — this is the world of the reef.

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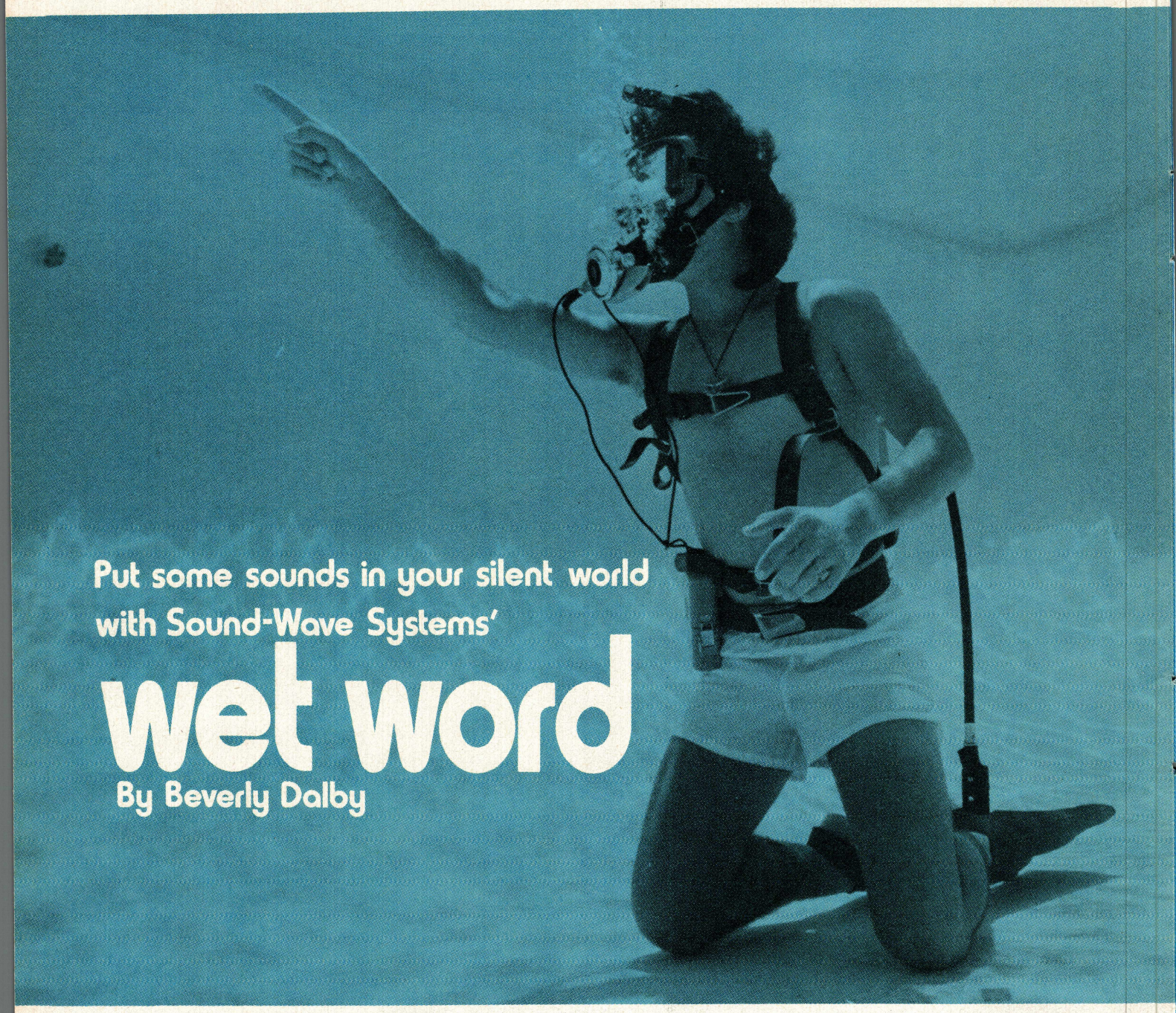
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Put some sounds in your silent world with Sound-Wave Systems'

wet word

By Beverly Dalby

For years divers have grunted and gurgled, hummed and hollered through regulator mouthpieces in vain attempts to communicate verbally underwater. Today, with the advent of highly sophisticated wireless U/W communication systems, we've entered a new dimension in sport and commercial diving.

With Sound-Wave Systems' line of compact diver-carried units, divers are able to experience clear and dependable voice communication with each other as well as with surface personnel. The possibilities seem endless. Scuba instructors, film directors and commercial divers have already found the value in being able to communicate clearly during U/W work.

The latest effort to emerge from the energetic Costa Mesa-based company is Wet Word™. Used in conjunction with Sound-Wave Systems' Sport Phone™, Wet Word is a lightweight, diver-carried receiver ideal for use in group situations. During a scuba class or an U/W filming session, for example, the instructor/director transmits via the Sport Phone while students or crew members receive via the Wet Word.

The Sport Phone can both transmit and receive, but, in many situations, such as scuba training sessions or during filming, there is a need only for one-way communication: An instructor gives encouragement while students perform a ditch and recovery exercise. Or, during the U/W tour portion of an ocean check-out, the instructor describes exotic marine creatures to wide-eyed neophytes. Similarly, during U/W filming, camera operators receive directions and have no need to reply verbally to the director.

For military and commercial divers, Wet Word is equally compatible with Sound-Wave Systems' Wet Phone™ (a professional model similar to Sport

Phone) which is available both as a diver-carried or a surface-operated unit.

Both Sport Phone and Wet Word are sturdily built and easy to use. Engineered with advanced solid state technology, the electronic circuitry is totally encapsulated and completely waterproof. Two heavy-duty stainless steel fittings clamp the battery pack onto the electronics module, while an O-ring seal prevents leakage down to 100 feet.

Both units are powered either by eight 1.5 volt AA alkaline batteries or ten 1.25 rechargeable ni-cad batteries. Battery life is about six hours of actual use. The battery pack is compact (about 6 x 2 x 3 inches), lightweight (about one pound negative in water), and can be worn on a belt around the diver's waist or placed in a BC pocket.

Sport Phone's transmitting microphone is contained within the Wet Mask™, a rubber breathing chamber attached to the second stage of the diver's regulator. The Wet Mask, or muzzle, replaces the mouthpiece of most single or double hose regulators. It is worn over the diver's mouth and is held in place by a mask strap worn high on the head, under the facemask straps. The diver then breathes and talks through the Wet Mask.

Attaching the Wet Mask to the regulator second stage places the regulator diaphragm about two inches lower in the water than usual. This pressure differential may cause a sensitive, finely-tuned regulator to free flow. Highly sensitive second stages should, thus, be de-tuned for use with the Wet Mask. We found that while Scubapro's Mark III free flowed slightly, the Mark V, with its 109 adjustable breathing second stage, worked very well.

The earphone on both units is contained within a small plastic-covered disc, about one inch in diameter. The disc is *not* placed inside the ear. Rather, it is held in place over the temple bone in front of the ear by the diver's hood or mask strap. Sound vibrations are then transmitted via bone conduction.

The range of the Wet Word system is about 100 yards. And its Automatic Gain Control gives equal strength and clarity to the message received regardless of the distance between divers. The system transmits and receives on an ultrasonic frequency of 31.5 KHz.

Both Wet Word and Sport Phone are water activated. That is, when the diver enters the water, the two contact screws on the power pack are activated and the earphone picks up any message transmitted from a Sport Phone or Wet Phone. The receiving diver need not operate any switches whatsoever.

To transmit with the Sport Phone, the diver simply touches a finger or thumb to a third screw positioned on the power pack. When the transmission is complete, the diver removes the finger to return to the receive mode.

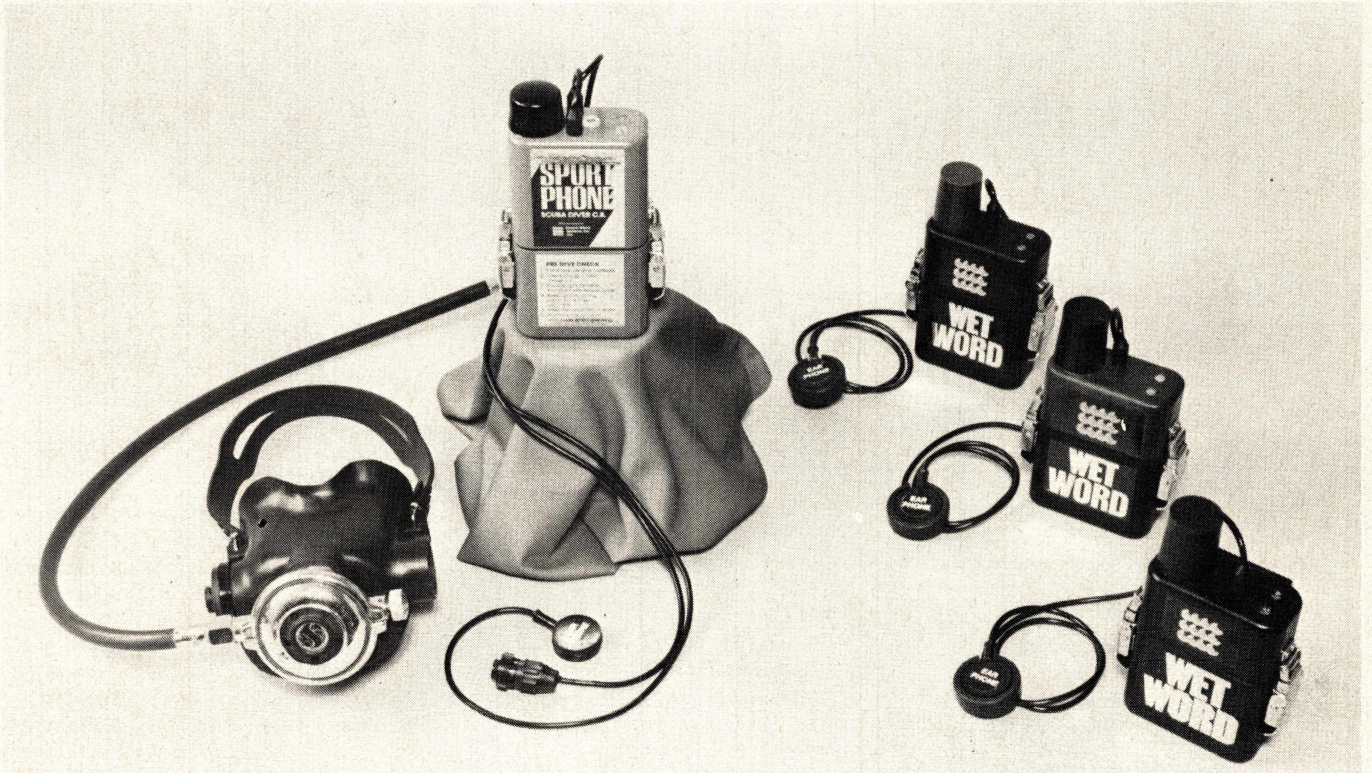
When speaking into the Wet Mask, the diver uses normal conversational tones. It is important, however, to enunciate clearly and distinctly.

Although both units are comfortable and fairly uncomplicated, divers should first use the new equipment in a swimming pool before venturing into open water with it. With the Wet Mask, in particular, the diver must make sure that it seals properly with the facemask and practice breathing and talking.

For instructors who have growled through their teeth in frustration at their inability to get a point across to a student underwater, and for film directors and commercial divers who must have absolutely clear communications with their staffs, the Wet Word system bridges a wide gap. With an initial investment of one Sport Phone ($197.50) and four Wet Words ($139 each), you can relax and become more creative in this new dimension of the underwater experience.

For information or a Wet Word demonstration, contact your local dive shop or Sound-Wave Systems, 3001 Red Hill Ave., Costa Mesa, CA 92626.

photographs by Geri Murphy



Used in conjunction with Sound-Wave Systems' Sport Phone, Wet Word is a lightweight, diver-carried receiver unit ideal for use in group situations. During a scuba class, an instructor can transmit verbal messages via the Sport Phone while students receive via the Wet Word.

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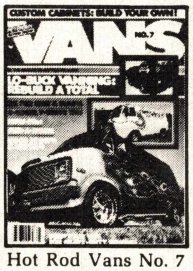
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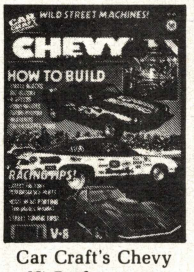
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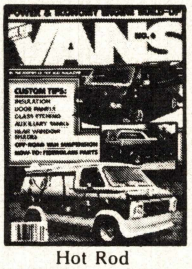
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GREENSTONE AWARD AT IQ-10

The 1978 recipient of the Leonard Greenstone Diving Safety Award will be honored at NAUI's IQ-Ten Awards gathering, November 12, at the Disneyland Hotel, Anaheim, California. The Greenstone Award was designed to encourage contributions toward safety in all aspects of diving and is open to all persons throughout the world. The award is administered by NAUI, but membership within the organization is not requisite. Members of the award selection committee are not eligible.



The award is usually presented once a year. Since its inception in 1974, the following recipients have been honored: Merrill P. Spencer, Lee H. Somers, Glen H. Egstrom, and Charles V. Brown.

Leonard Greenstone, founder of the award, has been actively diving for over 30 years and has involved himself in virtually every aspect of recreational sport diving, as well as the commercial diving community. As a NAUI instructor, he has served the organization in a leadership capacity at instructor certification courses and pioneered the industrial orientation programs of the early '70's.

For information contact: Judy Pierce, Greenstone Award Selection Committee, Box 630, Colton, CA 92324.

SPORTSWAYS ACQUIRES AUSTRALIAN DISTRIBUTOR

Sportsways, a division of Pittman Rubber Company of Huntington Park, Calif., has announced a new, exclusive distributor for the Sportsways line of dive equipment for Australia. Sea Hornet Skin Diving Equipment/T.D. Preece & Co. will handle Sportsways' line as well as repair parts and service.

Interested parties should contact: Sea Hornet Skin Diving Equipment/T. D. Preece & Co., 265 Condamine Street, Manly Vale, New South Wales, 2093 Australia.

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3. Is the price right? Will you get the most for your dollar?
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by the Occupational Safety and Health Administration, State Board of Education, Veterans Administration, the Health Department, the Fire Mashall, the Better Business Bureau, etc.?

Coastal has a clean slate, having recently had its **annual** inspections from all the above!

5. How many different types of diving gear will you be trained in?
At Coastal you will work with an average of 12 to 16 different types of helmets and be familiarized with many more. No other school has all this varied equipment.

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At Coastal your training will include working in a 35 foot deep river at our dockside where you will get the realistic (not simulated) effect of murky water and currents tugging at your lines. (We're not on a lake or shallow bay.)

7. Does the Basic Air Course cover all the phases of commercial work?
Coastal's training prepares you for work in construction, salvage, research, oilfields and more!

8. Does the school have the latest, up-to-date equipment?
Coastal does! Diving gear alone includes more than 30 different helmets, such as Miller Advanced, KMB, Savoie, Dive Tech, Commercial Hat, Aquadyne, Whidolf, Clamshell, Desco and others, plus equipment such as underwater TV's, one atmosphere diving suit, etc.

9. Is the school a full training facility?
Coastal's training doesn't end with its Basic Air Course. We also teach mixed gas-bell/saturation complex diving from our new gas barge. We also offer an additional chamber operator's course.

10. How many students have graduated from the school?
Over its 29 year history, more than 4700 have earned their diplomas from Coastal. Many are working in commercial jobs throughout the world, and some are even serving as instructors in competitor's schools, such as Commercial Diving Center.

11. Are the school's graduates getting jobs?
Check the employment surveys of the State and the Veterans Administration, and see Coastal's high ranking year after year.

12. Is the school recommended by people who know the best?
Coastal **has** the endorsement of professional divers, major diving companies, and contractors, unions, dive shops, skin diving instructors, school counselors, and our graduates! We don't depend on endorsement by a parent company ownership.

13. Is the school recognized as the leading training school in the country? Coastal is!
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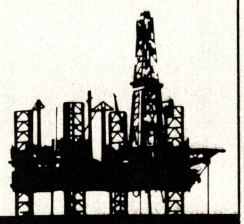
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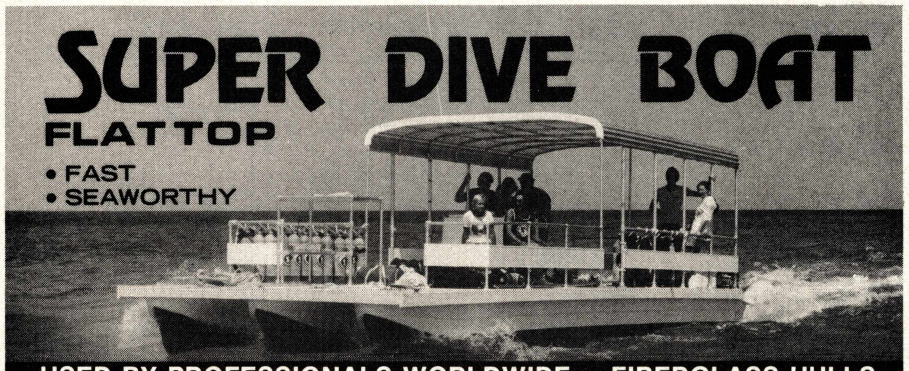
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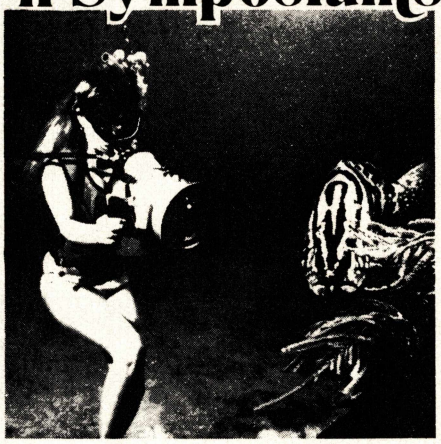


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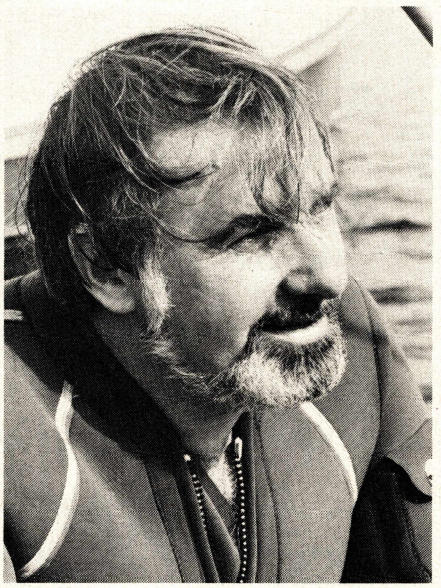
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Film Festivals 'n Symposiums



TZIMOULIS AT ROCKFORD SYMPOSIUM

Paul Tzimoulis, editor/publisher of SKIN DIVER Magazine and a renowned underwater photographer, will headline a weekend of entertainment November 10-11. Hosted by the Rockford Divers Association, the Tzimoulis Film



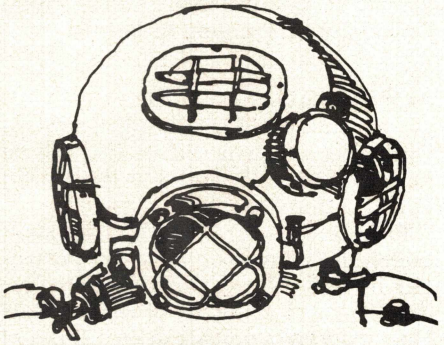
Symposium will feature some of the finest underwater films available anywhere. In addition to his own *Fish Feeding*, Tzimoulis will present *The Silent Warrior* by Al Giddings, *See* by Robin Lehman, *Deep Blue World* by Dave Adams, *I Am The Sea* by Ozzie Wissell, *Sea Sorcery* by Jim Dutcher, and *Fire Under the Sea* by Dr. Lee Tepley.

The symposium will be held at the Holiday Inn, South Beloit, Ill. The program starts at 7:30 p.m. Tickets are $3.

Also, on Saturday afternoon, amidst displays of all types of dive material, Tzimoulis will present an introduction to macro photography. Later in the afternoon, another film will be shown.

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tail party will precede the 9th Annual Fall Awards Banquet of the Rockford Divers Association.

For tickets and further information, contact: Bill Steinborn, 1385 Randall Drive, Rockford, Illinois 61108.

SAN DIEGO FILM FESTIVAL

Intricate coral reefs, frolicking marine mammals and looming undersea shipwrecks are a few examples of what you will see at the 14th Annual San Diego Underwater Film Festival, September 15-16, at 8:00 p.m. in the Civic Theater.

Each evening's show will feature an entirely different program of films and slide series. Among the films to be presented will be Jack McKenney's *The Underwater World of California*, an exciting film on kelp diving off the California coast. Other films to be shown include: *Virgin Islands-Virgin Reefs* by Gerry Hytha and Erich Heindl, *Guns and Garlands* by Ozzie Wissell, *The Humpback Whale* by Dr. Lee Tepley, *The Wreckhunters* by Charles Doucet, *The Silent Forest* by Lewis Trusty, and *Shipwrecks of Anagada* by Gerry Hytha and Erich Heindl. Chuck Nicklin, internationally known underwater photographer and San Diego dive shop owner, will be master of ceremonies.

The Film Festival is sponsored by the San Diego Underwater Photographic Society, a pioneer organization devoted to the promotion of underwater photography. Members of the society will present a display of color photographs as well as a collection of modern and antique underwater photographic gear.



Complimentary four color souvenir programs will be presented to those attending the festival.

Tickets for the performances are $4.75 for each evening and can be purchased at the door. Advance sales for the non-reserved seats will be held at the San Diego Civic Theater Box Office and local dive stores. Tickets may also be obtained by writing to Dottie Wissell, Ozzie's Music Co., 6875 El Cajon Blvd., San Diego, California 92115.

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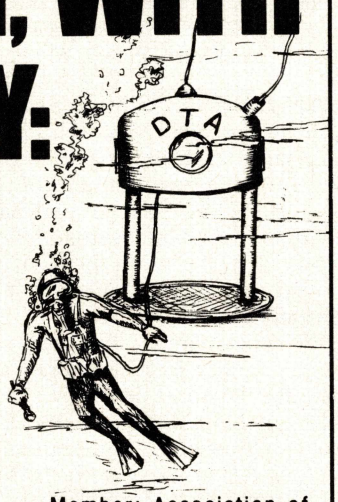
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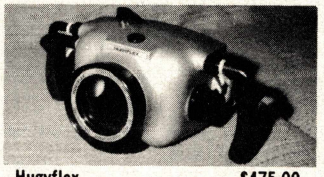
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FILMS 'N SYMPOSIUMS

reefs will be presented by the NAUI Diving Association at the Tenth International Conference on Diver Education to be held November 9-12 at the Disneyland Hotel, Anaheim, California.

Aimed at all agency dive instructors, assistants, leaders, divemasters, and serious divers, IQ-Ten is a gathering place for new ideas, techniques and topics. After the conference, divers are invited to Divers Day at Disneyland on Sunday, November 12. Unlimited ticket passes will be available at greatly reduced rates through IQ-Ten.

For information, contact: Jeanne Bear Sleeper, NAUI, P.O. Box 630, Colton, California 92324.

LA UPS COMPETITION

The Los Angeles chapter of the Underwater Photographic Society has announced its 16th Annual International U/W Photographic Film Competition. Deadline for entries is October 1, 1978. Entry blanks may be obtained from UPS, Box 7088, Van Nuys, CA 91409.

Winners will be announced at UPS' 16th Annual U/W Film Festival, November 4, at the Bovard Auditorium, University of Southern California.

AQUATIC SAFARI '78

The Indiana Skin Diving Council's convention, Aquatic Safari '78, will be held October 6, 7, and 8 at the Martin House in Indianapolis.

Photojournalist Rick Frehsee will highlight Friday evening's film presentation, while David Ward, of U/W Productions, and Dan Orr, of Wright State University, will participate in a series of educational seminars on Saturday. An underwater photography contest will be held on Sunday.

Tickets are $4 for Friday night and $2 for Saturday and Sunday. For information, contact: Aquatic Safari '78, P.O. Box 415, Indianapolis, Ind. 46206.

DEMA '79 — BIGGEST EVER

Bob Gray, DEMA general manager, has announced that exhibitor registration for the 1979 DEMA Trade Show is running well ahead of projections with more than 100 booths already sold.

The DEMA Trade Show and Convention, to be held in New Orleans January 20-23, will feature the largest display of scuba diving equipment and related products ever assembled in the world. All major manufacturers will show their full lines. Instructional organizations will present the latest techniques in diver instruction/education. A large contingent of travel/tour operators will offer a range of vacation packages.

Seminars, breakfasts and cocktail parties are planned for the New Orleans visitors. The Grand Hotel has allocated

more than 20,000 square feet of exhibit space in the Grand Ballroom and Hall of the Americas.

Gray stated that New Orleans, one of America's most hospitable cities, offers visitors a myriad of activities. Bourbon Street, fabulous restaurants, night life and tours of all kinds await DEMA attendees and their families.

U/W ARCHAEOLOGY FILM

The Texas Antiquities Committee has announced the release of a documentary film covering the 1973 excavation of the committee's Padre Island Underwater Archaeological Research Project. The film illustrates underwater excavation techniques employed at the site of a mid-16th century Spanish shipwreck off the south Texas coast. Also included are scientific methods used in recovery of anchors and cannons and the cleaning and preservation of these artifacts.

The 35 minute film entitled *Graveyard of the Gulf* was produced by KLRN Educational TV, University of Texas at Austin, in 16mm, color and sound. Narration is by Ricardo Montalban. The film can be reserved by writing to the Texas Antiquities Committee, P.O. Box 12276, Capitol Station, Austin, TX 78711.

CDC'S U/W PHOTO CLASSES

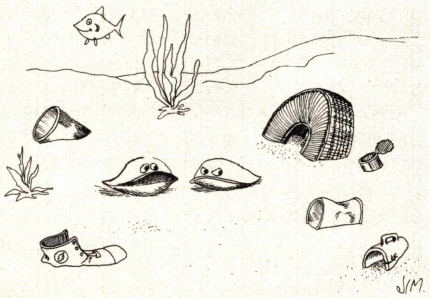
For the first time in its history, the L.A. Harbor based Commercial Diving Center will offer its Underwater Photography/Television course to the public.

Courses will be held in March, June, September and December each year and run for three weeks. The cost is $350, plus a lab fee which will depend on the equipment a student requires. A complete lab kit is $125.

The course is full time with classes meeting Monday, Tuesday, and Wednesday, with a half day either Thursday or Friday. All equipment and lab facilities will be furnished by CDC. The course instructor is Tom Mix.

Since a commercial U/W photographer is called on in the field to operate independently and set up shop in any dark corner, he must do his own lab processing. For this reason, the course includes film processing, loading, developing and printing.

For details contact CDC, 272 South Fries Ave., Wilmington, CA 90744.



"Well, I never promised you a rose garden."

Danny's Specials!

Unbeatable prices for the end of the Summer



C U.S. Div. Full Vision Low vol. mask. $18.95

AQUA DIVE 1000 A SUPER DEAL $129.95 B



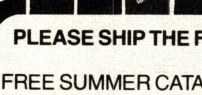


80 cu.ft. alum. tank J-$116.95 K-$109.95

Parkway ¼" suit Farmer pants/jacket/hood. $141.95

A

E U.S. Div. press. gauge. $32.95



D U.S. Div. Rocket fins. $14.95

All metal dive light. $54.95 F





MR12 Regulator. $109.95

PLEASE SHIP THE FOLLOWING

☐ FREE SUMMER CATALOG

☐ A Parkway's ¼" suit. Nylon two sides, Farmer pants w/jacket. Blk. w/red panel, free reg. hood. . . . $141.95

☐ B Aqua Dive 1000 watch, one year store guarantee. Tested to 3000 ft. All metal case, velcro strap. $129.95

☐ C Full vision, U.S. Divers lowest volume wraparound mask w/opt. purge valve. 3 lens, 180° vision. . . $18.95

☐ D U.S. Divers Rocket fins. $14.95

☐ E U.S. Divers Pro Dive 1 pressure gauge w/strap clip. Limited supply. $32.95

☐ F All metal rechargable light. Includes battery and charger. $54.95

DANNY'S DIVE SHOP

1579 Grand Ave., Baldwin, N.Y. 11510
Tel. (516) 223-8989
Located bet. Sunrise Hwy. & So. State Pkwy.

VISA _____ MASTER CHARGE _____

AMERICAN EXPRESS _____

Name _____

Address _____

City _____ State _____ Zip _____

Use and operation of life support equipment should not be undertaken without qualfied and proper instruction in their use. This ad does not imply the sale of life support equipment through the mail

DIVE ACCESSORIES



Original Scuba (Sq. Design)
Buckle #707-B — Brass ($ 6.95) Gold ($29.95)
Medallion #707-m/k — Brass ($ 5.95) Gold ($12.95)



Wreck Design
Buckle #709-B — Brass ($ 6.95) Gold ($29.95)
Medallion #709-m/k — Brass ($ 5.95) Gold ($12.95)



Scuba Center
Buckle #708-B — Brass ($ 6.95) Gold ($29.95)
Medallion #708-m/k — Brass ($ 5.95) Gold ($12.95)







- Medallion orders receive a free key chain and gift box.
- Any order over $17.00 receives a free patch.
- Belts available in black or brown — State size and color — $5.00 each.
- All products shipped UPS — Allow 15 days for delivery.
- Shop early for Christmas.
- Dealer inquiries invited.
- Buckles and medallions custom made to order for clubs, companies and organizations.

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Honest Archie has built Central into one of the largest and most reliable diving equipment dealers in the world. Each year tens of thousands of satisfied divers are properly equipped and happy that they have spare cash left over thanks to Honest Archie's low-profit big-volume price structure. Thousands of these divers have received the finest certified scuba instruction in Central's own indoor heated pool. where you can also try your equipment before you buy.

SEPTEMBER CLEARANCE SALE

PRICES SHOWN ARE GUARANTEED UNTIL OCT. 1, 1978



SEA HAWK KNIFE

Big, heavy-duty knife for divers who want the best. 7¾" serrated 300-Series stainless steel with 6" measuring scale on blade. Removable hammer-type head, contoured rubber grip, deluxe double locking sheath.

CENTRAL SPECIAL $20.00
All other knives on sale.

TANKS

Famous make 80 Cu. Ft. aluminum tank complete with valve. "Lifetime Guarantee" Professional quality at an amateur price.

CENTRAL SPECIAL $109.00
All other tanks on sale.



BAC-PAC

The best Kam-Action quick-release pac that fits any size tank. Recommended by ARCHIE!!

CENTRAL SPECIAL $26.00
All other bac-pacs on sale.

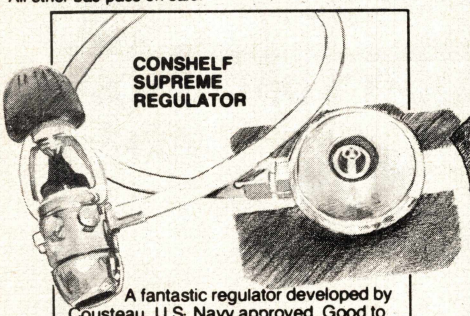
RECHARGEABLE LIGHT

A new light constructed of lightweight, high-impact space age material. 3½ hours of super bright light. Complete with recharger. All other lights on sale.

CENTRAL SPECIAL $60.00



CONSHELF SUPREME REGULATOR



A fantastic regulator developed by Cousteau. U.S. Navy approved. Good to 1200 ft. Silicon-filled first stage for smooth inhalation at any depth. Cannot freeze-up at any temperature. Lifetime guarantee.

CENTRAL SPECIAL $105.00
All other regulators on sale.

PUT A ROCKET ON YOUR FEET



You won't fly but you'll certainly swim faster and easier. Rocket Fins are used by UDT teams, USMC and the French Navy. Adjustable heel strap for use with or without boots.

CENTRAL SPECIAL $16.00
All other fins on sale.

NYLON TWO SIDES SUIT



Once we know your height, weight, chest, waist & hips you'll be into a fantastic ¼-inch suit at a fraction of what you'd expect to pay. Stitched seams. Five zippers. Custom-contoured in stock sizes for men and youths. XS, S, M, L, XL.

CENTRAL SPECIAL $84.00
All other suits on sale.

¼" NYLON 2 FARMER SUIT $104.00

WRAP-AROUND MASK



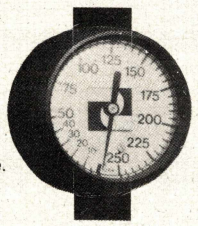
You won't miss a thing with this double-edge, stainless rim, tempered glass, 180° vision, super-fit mask.

CENTRAL SPECIAL $19.00
Other masks from $8.95. See catalog.

UNDERWATER PRESSURE GAUGE AND OCTOPUS

Safety first at all times. One of the finest, luminous, rubber covered pressure gauges for any regulator is now on sale. The absolute, finest Octopus made is now on sale.

GAUGE SPECIAL $30.00
OCTOPUS SPECIAL $50.00
All other instruments on sale.



OIL FILLED DEPTH GAUGE

A larger dial face gauge that features black letters on a luminous dial. Oil filled for corrosion-proof accuracy. Rubber strap.

CENTRAL SPECIAL $32.00
All other gauges on sale.

All luminous oil filled depth gauge and pressure gauge combo.

CENTRAL SPECIAL $67.00

STROBE SYSTEM

If you own a Nikonos you are about to be offered a fantastic deal. You get a famous make strobe complete with the II or III connector; a swivel arm; a mounting tray; a handle; a quick-fire trigger; a plastic, foam-lined case to hold everything. Compact 150 W/S output,300 flashes on 2 "C" cells. Recycles 6 seconds. 65° diagonal. Good to 250 feet. A $300 list price.



CENTRAL SPECIAL $225.00
Super-complete photo department. See catalog.

Underwater life support systems are potentially dangerous to a non-trained user. These include scuba tanks, regulators and bouyancy compensators. This ad does not constitute an offer to sell these items via mail order.



¼" NYLON TWO SIDE HOODS AND BOOTS

For that really cold day you need a contoured hood with chin pocket. Stitched seams and cannot rip.

CENTRAL SPECIAL $13.50

Hard sole boots for maximum protection and strength. A must for Rocket type fins.

CENTRAL SPECIAL $19.50
All other suit accessories on sale.

U.S. DIVERS COMPENSATOR

Fantastic over the shoulder compensator complete with deluxe kam pac. Fits any size tank. Low pressure inflator, over-pressure dump valve, CO_2 detonator. Newest concepts.

CENTRAL SPECIAL $135.00
Other compensators on sale.

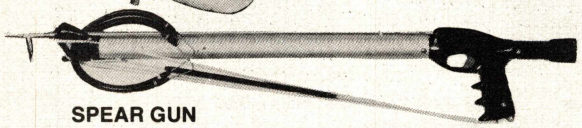




U.S. DIVERS BCII BUOYANCY COMPENSATOR

Double-bag construction, lifetime guarantee, and all the features you want. Front pocket, oral and CO_2 inflators plus low pressure scuba connector included.

CENTRAL SPECIAL $95.00
All other buoyancy compensators on sale.



SPEAR GUN

Deluxe lightweight gun that floats after firing. Big 1¼" barrel, cycolac grip and muzzle, stainless steel parts, positive safety, automatic shock line release, etc. 36" overall, 2 slings, stainless shaft, barb point.

CENTRAL SPECIAL $32.00 All other guns on sale.

HONEST ARCHIE'S "SELL-A-WAY"

If you are thinking of buying at least $25.00 worth of diving equipment Honest Archie has a deal for you. Would you buy an underwater watch for $5.00? How about a 7" diving knife for $5.00? Could you use a wet suit for $5.00 or a rechargeable dive light for $5.00? Honest Archie is having a "Sell-A-Way" where everyone who buys $25.00 or more can purchase one of these or other valuable items for only $5.00. Please send immediately for your FREE "Sell-A-Way" rules.

CENTRAL SKINDIVERS
2608 Merrick Road, Bellmore, N.Y. 11710

Please ship the following immediately. I understand CENTRAL pays all the shipping.

☐ BAC-PAC	$26.00	☐ GAUGE	$32.00
☐ PRESSURE GAUGE	$30.00	☐ COMBO	$67.00
☐ SPEAR GUN	$32.00	☐ ¼" HOOD	$13.50
☐ ¼" SUIT	$84.00	☐ ¼" BOOTS	$19.50
☐ ¼" FARMER SUIT	$104.00	☐ KNIFE	$20.00
☐ ROCKET FIN	$16.00	☐ LIGHT	$60.00
☐ MASK	$19.00	☐ STROBE	$225.00

☐ SEND ME THE "SELL-A-WAY" RULES FREE
(SELL-A-WAY ENDS OCT. 1st)

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BARSKY TO PADI COLLEGE

Steve Barsky has recently joined the staff of the Florida PADI College at Jacksonville, Florida. As training director, Barsky is responsible for open water training and screening of applicants for admission. Steve joins course directors John Slate and Roger Lloyd, and Joseph F. Califano, Jr., equipment repair instructor and vice-president of Underwater Educators, Inc.



Steve brings ten years of experience in the dive business to the Florida PADI College. He has been employed in several dive stores in California, by White Stag, and was program manager for the NAUI Diving Association. He holds a Master's degree from the University of California at Santa Barbara and his work on underwater television is under review by the Naval Coastal Systems' Lab in Panama City, Florida. Steve also worked in the North Sea as a commercial diver and air diving supervisor.

For information on the PADI's ten week diving instructor program or seven-day instructor course, contact: Florida PADI College, 4593 St. Johns Avenue, Jacksonville, Florida 32210.

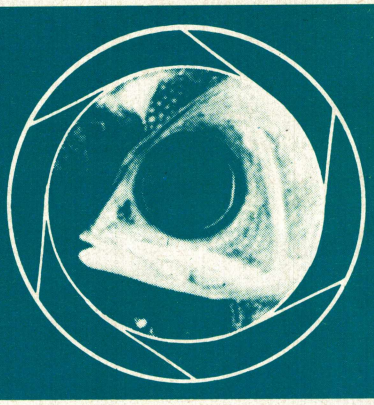
WOMEN AND DIVING CONFERENCE RESCHEDULED

A conference on Women and Diving, postponed from February, has been rescheduled for October 21, 1978, at the Wellesley College Science Center, Wellesley, Mass. This event is sponsored jointly by Aquawomen, an all-women scuba group active in the Boston area, and by NAUI.

The October conference is a significant effort by both organizations to reach a larger portion of the dive community. Participation of attendants will be encouraged and ample time has been allowed for interaction. Preregistration is strongly suggested since the response to the originally-scheduled conference was heavy.

For more information and to preregister contact Valerie Costelloe, % East Coast Divers, 213 Boylston Street, Brookline, Mass. 02146. Telephone: 617/277-2216.





Beginners' Course In U/W Photography

BY JIM AND CATHY CHURCH

PART IX: WORKING WITH COLOR

photographs by Jim & Cathy Church

The purpose of this lesson is to give you some guidelines for working with color. We can help you get started, and help you avoid the typical beginner's mistakes, but keep in mind that this is a subjective topic: After you have mastered the basics, you will develop your own opinions about techniques, films, filters and lighting.



Ektachrome 64 produces royal blue backgrounds and warm colors.



Ektachrome 200



Kodachrome 64



Kodachrome 25

RECOGNIZING U/W COLORS

You must learn to recognize colorful U/W subjects. For example, at 60 feet, a bright red sponge doesn't appear red to your eye. Rather, it appears dark and drab. It is only when you illuminate the sponge with artificial light that you see the brilliant color. Thus, you can swim past dozens of colorful underwater subjects, but without recognizing them for what they are.

Take an exploratory dive with a hand light. Move slowly and shine the light on corals, sponges, starfish, anemones and other U/W subjects at close distances. You will be pleasantly surprised at the colors which will appear. And with experience, you will soon be able to remember and identify those subjects which will be colorful when photographed with strobe or flashbulb.

COLORFUL EQUIPMENT AND PROPS

If you and your spouse model for U/W pictures, choose colorful dive gear. A blue wetsuit photographs much better than a black wetsuit, and lead weights covered with a colored, plastic coating photograph nicer than old-style lead blocks strung on a belt. If your spouse

has pretty eyes, buy her a mask which will display them rather than one which will give her a "bug-eyed" appearance. An U/W light can be a good prop, especially if your subject is shining it on something colorful. If possible, use a movie light bulb to increase the light intensity if your hand light offers this option. It all boils down to this: Colorful subjects make colorful pictures, and drab subjects make drab pictures. Choose your equipment accordingly.

WORK CLOSE FOR COLOR

If you want rich colors in your U/W pictures, stay in shallow water for sunlight exposures, and minimize camera-to-subject distances for both sunlight and flash exposures.

The light rays which make up the warm colors are absorbed during the entire U/W light path. For sunlight exposures, this means that the warm colors are being absorbed as the sunlight travels downward to reach your subject, and also as the light reflects from the subject and travels horizontally to reach your camera. And with a flash unit, the warm colors are absorbed as the burst of light travels from flash to subject, and reflects back from subject to camera. In other words, the further the light must pass through water, the bluer it will become. Thus, a weaker strobe held in close to the subject will produce warmer pictures than a stronger strobe (of the same color temperature) held further away.

The reason most of your colorful U/W pictures will be close-ups exposed with flash is because of the short distance the light must travel. And for your larger subjects, use wide-angle lenses to allow you to get close and shorten the U/W light path. Regardless of the film and filters used, staying shallow for sunlight exposures, and getting close for flash exposures, are probably the most important rules for obtaining good color.

COLOR TEMPERATURE

Color temperature refers to the color of light. To illustrate: If you heat a piece of iron in a furnace, it would change colors — from black to red, from red to orange, from orange to yellow and eventually to blue — as the temperature increases. This relationship of temperature in degrees centigrade to the color of the glowing iron is the basis of the color temperature system used to indicate the color of light. And because the system was devised by an Englishman, Lord Kelvin (who used zero degrees rather than -273°C as absolute zero), color temperatures are expressed in degrees Kelvin (K) rather than in degrees centigrade. A light source with a high color temperature is rich with blue light which gives us a cool feeling; a light source with a low color temperature is rich with red and yellow light rays and gives us a warm feeling.

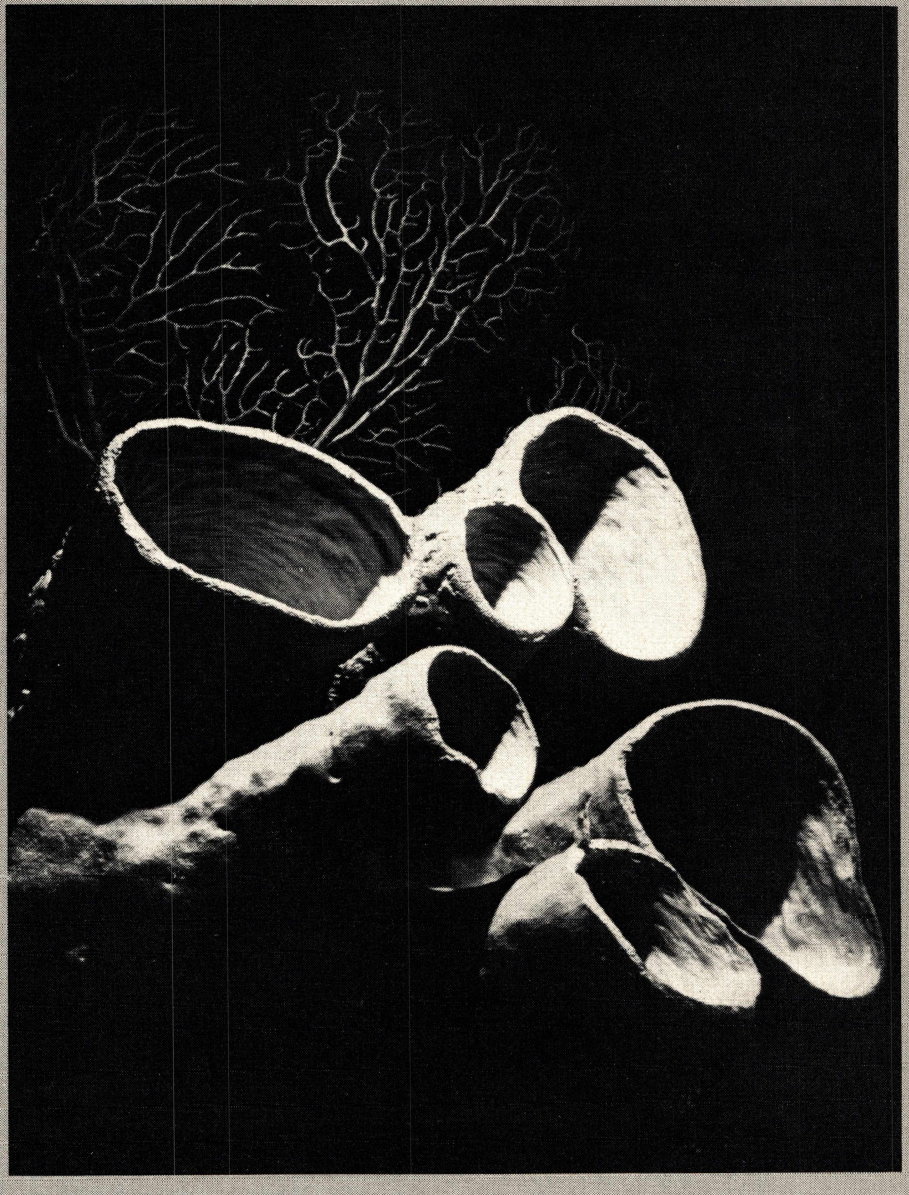
COLOR BALANCE

Color films are balanced for exposure with light sources of a specified temperature. For example, Kodak daylight slide films are balanced for a 5500K (5500° Kelvin) light source, the average color temperature of sunlight. If these films are exposed with a light source having a higher color temperature, the resulting slides may be too blue. And if exposed with a light source having a lower color temperature, the resulting slides could be too red. Therefore, the film must be balanced for the color temperature of the light source used, or filters may be needed for balancing or correction.

DAYLIGHT COLOR SLIDE FILMS

Daylight color slide films are used for U/W photography because these films are balanced for exposures with sunlight, electronic flash or blue flashbulbs. The end result will be color slides which can be projected with a standard slide projector; and if necessary, black and white negatives and color prints can be made from the slides.

We suggest that you standardize with two films — a slow (low ASA) film for close-ups and a fast (high ASA) film for your longer-distance shots. For reasons developed in this article, we have standardized with Ektachrome 64 and Ek-



Ektachrome 200 has surprisingly good color reproduction and fine grain for an ASA 200 color slide film. It is a substantial improvement over the older High Speed Ektachrome which it replaced. Since it is almost two stops faster than the ASA 64 films, depth of field is almost doubled with Ektachrome 200.



To learn to recognize colorful underwater subjects, take an exploratory dive with a hand light. Move slowly and shine the light on corals, sponges, starfish, anemones and other interesting subjects. You will be pleasantly surprised at the colors which will appear. Soon you will be able to identify them as good subjects for color photography.

tachrome 200, and are looking forward to the release of Ektachrome 400. However, depending on your equipment, locale, subjects and personal preference, you may standardize with other films. The main idea is to standardize your procedures so you can predict the end results.

SLIDE FILM LATITUDE

You may have read in books or other articles that a particular color slide film has a latitude of plus or minus one or more stops. This is the margin of error—how much the exposure can vary from the correct exposure, but still produce an acceptable picture. Generally, color slide films with lower ASA ratings have less latitude than films with higher ASA ratings, but this can vary with different films. Ektachrome 64, for example, appears (to us) to have slightly more latitude than Kodachrome 64.

In practice, you can't always follow the published latitude figures. Dark subjects reduce the latitude for underexposure; light subjects reduce the latitude for overexposure; and subjects with both dark and light centers of interest reduce the latitude for both under- and over-exposure. When exposing for the brighter subject areas we consider the latitude to be (plus or minus) one-quarter stop for ASA 25, one-half stop for ASA 64 and a three-quarter stop for ASA 200. Of course these are subjective opinions, and you may consider the latitude to be greater or smaller.

WORKING WITH KODACHROMES

Kodachrome 25 is one of the finest-grained color slide films available. It allows extreme enlargements with excellent sharpness of fine details. The resolution of Kodachrome 25 may well outperform the resolving power of some camera lenses. When Kodachrome 25 slides are projected, brilliant oranges, reds and yellows seem to leap out.

Because of its low ASA rating, it is usually used with powerful strobe or flashbulb lighting for close-up work with macro lenses, close-up lenses and extension tubes. It is suitable for U/W sunlight exposures in only the brightest conditions. Because Kodachrome 25 has less latitude and greater contrast than films with higher ASA ratings, exposure can be a problem. With small strobes, you may have to set the aperture for f16 rather than f22 for close-ups, which reduces depth of field, and you must be within about one-quarter stop of the correct exposure setting. Because of the high contrast between light and shadow areas, uneven lighting can produce harsh shadow areas, or uneven exposure when the flash is held close and directed in from one side.

Kodachrome 64 is also a sharp, fine-grained film which produces brilliant oranges, reds and yellows. We usually recommend Kodachrome 64 (rather than Kodachrome 25) because it needs less light for an exposure, and has slightly more latitude and less contrast. You can expose your close-ups at f22 to

gain depth of field, and with exposure latitude of about one-half stop, minor exposure errors are less critical. Kodachrome 64 is an excellent choice for photography where flash provides the primary light for the exposure — such as close-ups and fish portraits. However, in shallow reefs where the water has a greenish cast, Kodachrome 64 may accent the green tint. And with blue-water backgrounds, Kodachrome tends to shift the blue to blue-green.

Generally, the Kodachromes are sharper, and have finer grain, greater contrast and produce warmer colors than Ektachromes. We recommend Kodachromes for close-up work with flash if the end product is to be the processed Kodachrome color slide.

WORKING WITH EKTACHROMES

Although the Ektachromes have less contrast, and produce bluer skin tones than Kodachromes, we prefer the Ektachromes whenever midwater backgrounds will be prominent in the picture. Blue water backgrounds on Ektachromes will be a clear blue, rather than a flat, blue-green. And other color casts, such as greenish water, are often cleaner with Ektachromes.

Ektachrome 64 is an excellent general-purpose film for close-up work with flash, or for sunlight and flash fill work at longer distances. Because it has less contrast than Kodachrome, it will properly expose a greater range of subject reflectances. While skin tones and whites are slightly bluish, greens, oranges and reds are bright. Ektachrome 64 gives superb blue-water backgrounds — clear blue water becomes royal blue on an Ektachrome 64 slide.

Ektachrome 200 has surprisingly good color reproduction and fine grain for an ASA 200 color slide film. It is a substantial improvement over the older High Speed Ektachrome which Ektachrome 200 replaced. Skin tones, oranges and reds are excellent, and appear to be even warmer than with Ektachrome 64. And being almost two stops faster than the ASA 64 films, depth of field is almost doubled when you use Ektachrome 200.

Both Ektachrome 64 and Ektachrome 200 are available in both professional and consumer versions. At this writing, we suggest that you use the consumer version to avoid the stricter storage and immediate processing restrictions of the professional versions.

Compared to the Kodachromes, the Ektachromes offer three advantages:

1. Because the Ektachromes are less contrasty, you can usually make better duplicate slides from an Ektachrome original. Duplicating builds contrast, and duplicating a contrasty slide can result in a dupe with too much contrast. But, if a slide lacks contrast, duping might be an improvement.

2. You can process Ektachrome slides at home or during extended trips. Also, remote locations which have local slide processing usually process Ektachrome only (process E=6) because Kodachrome processing is too complicated.

FLASH, FILTERS AND COLOR

Small strobes, with trough-shaped reflectors and straight flashtubes, usually have color temperatures of about 6000K. And when these strobes are used to expose Kodak color slide films, the skin tones and whites may be bluish. With Kodachrome 64, try using an 81A filter for close-ups. And with Ektachrome 64, try the slightly stronger 81B to warm your slides. If you use different films, and wish to stay with one filter, you can use the Aqua-Craft Warm-up Filter or SeaCor Sea-Filter IV.

Strobes with rounded reflectors and curved flashtubes may have color temperatures as low as 5500K. With a 5500K strobe, using a filter with Kodachrome close-ups can warm the slides too much — the whites can blend into the pinks. And with Ektachrome close-ups, use the 81A if you want a slight warming effect. Also, exposure must be increased by about one-third stop.

In a recent experiment with an automatic exposure control, we found that the shorter the duration of the strobe flash, the bluer the color slides.

Blue-coated flash bulbs have a color temperature of 6000K, and you can use the same filters as you would with a 6000K strobe. Clear flashbulbs, however, have a color temperature of 3800K, which is too reddish for close-up work. However, at long distances where much of the red is filtered out as the light travels through the water, that which does make it through the total light path can add a touch of reddish fill to your sunlight exposures.

COLOR SLIDE EXPOSURES

Expose for the brightest, most reflective areas of the subject and let the darker areas go dark. For example, if your subject is wearing a black wetsuit, and is holding a seashell with bare (light skin) hands, expose for the hands and the face within the mask — forget about the black wetsuit. Your color slide film can't possibly handle the differences in reflectances between the light skin and black wetsuit. If you try to average the exposure for a midpoint between the hands and wetsuit, the suit will still be dark, and the hands will be overexposed.

Remember: The viewer's eye will tolerate dark areas in a color slide if the main point of interest is properly exposed, but won't tolerate overexposure. Select and expose for bright subjects for good color and exposures.

USING COLOR NEGATIVE FILM

If you want color prints for your scrapbook, or color negatives to work with in your own darkroom, color negative films may be the way to go. One of the greatest advantages of using these is the increased latitude: You can miss the exposure by a couple of stops and still get color prints.

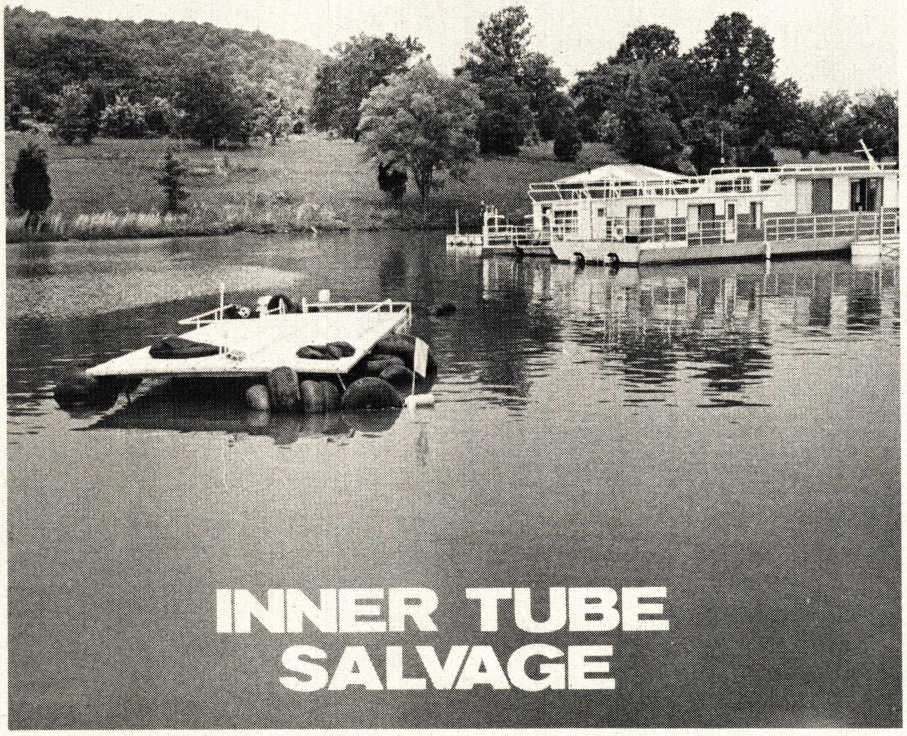
In a series of test exposures with Kodak Vericolor Professional II (ASA 100) and Kodacolor 400 (ASA 400), we made exposures over the entire range of stops of a Nikonos 35mm lens — f2.5, f4, f5.6, f8, f11, f16 and f22 — all at 1/60 second. An exposure meter reading for a sunlight exposure at 1/60 second was f5.6-8 for the Vericolor II, and f11-16 for the Kodacolor 400. We used the same subject, during the same dive — Cathy posing with some yellow tube sponges and friendly fish, with a reef and blue-water background — for each exposure. Kodak processed the film and made an acceptable 3½ x 5 inch color print from each of these 14 test negatives. We then sent three of the Vericolor II negatives (exposed at f2.5, f5.6 and f22), and three of the Kodacolor 400 negatives (exposed at f2.5, f11 and f22), back to Kodak for duplicate color slides. Kodak made acceptable slides of each of these.

While the above tests did show that color negatives films have exceptional latitude, keep in mind that the overexposed negatives lost some detail in the highlight areas, and the underexposed negatives lost detail in the shadow areas. And that we were viewing the prints and slides in terms of scrapbook and home projection use, rather than for magazine or professional presentation.

In the above tests, and subsequent exposures with Vericolor II, Kodacolor II (ASA 100) and Kodacolor 400, we found that skin tones and warm colors tended toward orange-brown, and that blue-water backgrounds shifted to blue-green. However, the color rendition of a color print depends greatly on how the negatives are printed. Ours were mass produced by a Kodak consumer lab. Custom printing can improve the color rendition.

CONCLUSION

While working with color can add impact to your U/W pictures, color is only one element of good photography. Don't use color as a crutch to support pictures which are poorly composed, exposed or focused. Lastly, don't be too quick to believe that Ektachromes are too bluish for U/W photography in blue water. If the background is blue, choose a film which records blue well.



INNER TUBE SALVAGE

Economic Procedure For Shallow Water Recovery

By Vesta Rea-Salisbury

I'd stumbled out of the local neighborhood movie theater shaking my head in amazement at the brilliant underwater exploits of *Airport 77*, and wondering about the trials and tribulations of the 747 passengers.

"What a salvage job, I exclaimed to my husband; just absolutely fantastic!"

"Yah," he remarked, "but they had several things going for them. The operation had clear water, plenty of manpower, the latest in flotation equipment, the Navy and the taxpayer's money. You can't beat that combination of positivisms for a success story."

I did not answer. It hardly called for any further discussion.

It wasn't till some weeks later that the movie crossed my mind again. This time I sat cold and shaking on the bottom of a muddy Tennessee lake as part of a three person team trying to raise a 44 foot houseboat with zero visibility, 55 inner tubes, 12 air cylinders, a few float bags and two underwater lights. Somehow, the atmosphere of romance and excitement projected in the movie was missing. Sadly, that is the way it is with most salvage jobs — all work, too much expense and no glory!

Actually, there is a very simple and inexpensive approach to salvage — enough flotation can raise anything. This means that tubes, bags and even ping-pong balls could do the job if the diver were so inclined to use them. The magnificent sling contraption rigged to bring the movie plane up cannot be afforded by the average struggling salvage operation. Used truck inner tubes are the perfect solution for shallow water salvage which does not exceed 35 feet or so. If the submerged object is deeper than this, a ridged or vented flotation device (gasoline tanks or drums) is used so air can escape as the sunken object rises. Owing to Boyle's Law, the volume of air in an inner tube will double by the time it reaches the surface from a depth of 34 feet. Therefore, tubes must be carefully filled to allow for this expansion to prevent explosion.

The average truck inner tube will lift about 350 to 400 pounds and can usually be obtained without charge from a local tire store. (More often than not, the store doesn't even want them back.) After the tubes are acquired, the prospective diver needs to secure at least ten scuba tanks, or less if a portable compressor is available. For this particular job, 450 feet of rope was purchased to be cut and tied around each tube so the flotation could be anchored, in a stable manner, on the houseboat railing. If the railing had not been strong enough, the anchor spots would have been the cleats or heavy duty C-clamps attached to the hull. Probably the most essential accessory item for an inner tube job is several tube patching kits — one never knows when there might be a puncture or just a blow out. As far as person power, two divers should be in the water and one tender topside handling supplies, filling tanks and acting as a relief worker. With relatively little investment, all supplies and equipment can be borrowed or purchased within a short time and the operation can get underway.

As for the unpleasant job of working at zero visibility, the divers must accept this as an occupational hazard, particularly when doing freshwater salvage. Few lakes or rivers have any clarity at depth and it is not uncommon for the water temperature to drop below 50 degrees. For all the discomforts there are two definite advantages — the work is challenging and profitable.

As stated before, our project was a 44 foot Captain Craft houseboat made in Chattanooga with a list price of $12,500. It had been sold the previous year to Defeated Creek Marina on Cordull Hull Lake in the Tennessee hills. In midwinter of 1977, the heavy rains and snows had accumulated on its hull and with the melting precipitation draining into the hold through the control cable canal it quickly became bottom heavy. Like the *Titanic*, on one winter's day the houseboat glided quietly down to its muddy resting place 30 feet below. There it stayed till May.

When Neptune Equipment Company, out of Nashville, was called in, the first objective was to find the boat and determine its position. Even a boat as large as this can be difficult to discover in zero visibility. Besides, there is nothing pleasant about bumping into trees, scrubs and discarded trash while wandering aimlessly around a muddy bottom. Fortunately, luck was with us and within a few minutes the object was located. The vessel was found to be slightly nose up and lying partially under the dock. Flotation markers were attached to each corner and allowed to rise to the surface. These markers expedited the ascents and descents of the divers, and enabled the workers to always know their exact location on the derelict. Then deflated inner tubes were taken down, attached at intervals along the bow and stern and then inflated. The inflation process was handled with a scuba tank and a filler hose after the stems on the tubes had been removed. The boat's position was such that extra flotation was secured on the outside railing from the dock so the large mass could be side-slipped out from under the obstacle as it rose.

The first visual observation that headway was being made was when the nav-

(Continued on Page 79)

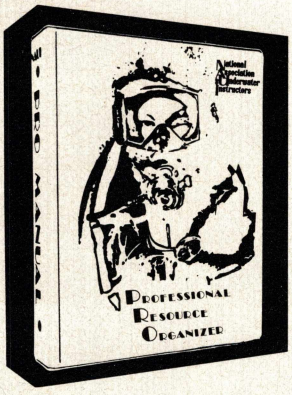
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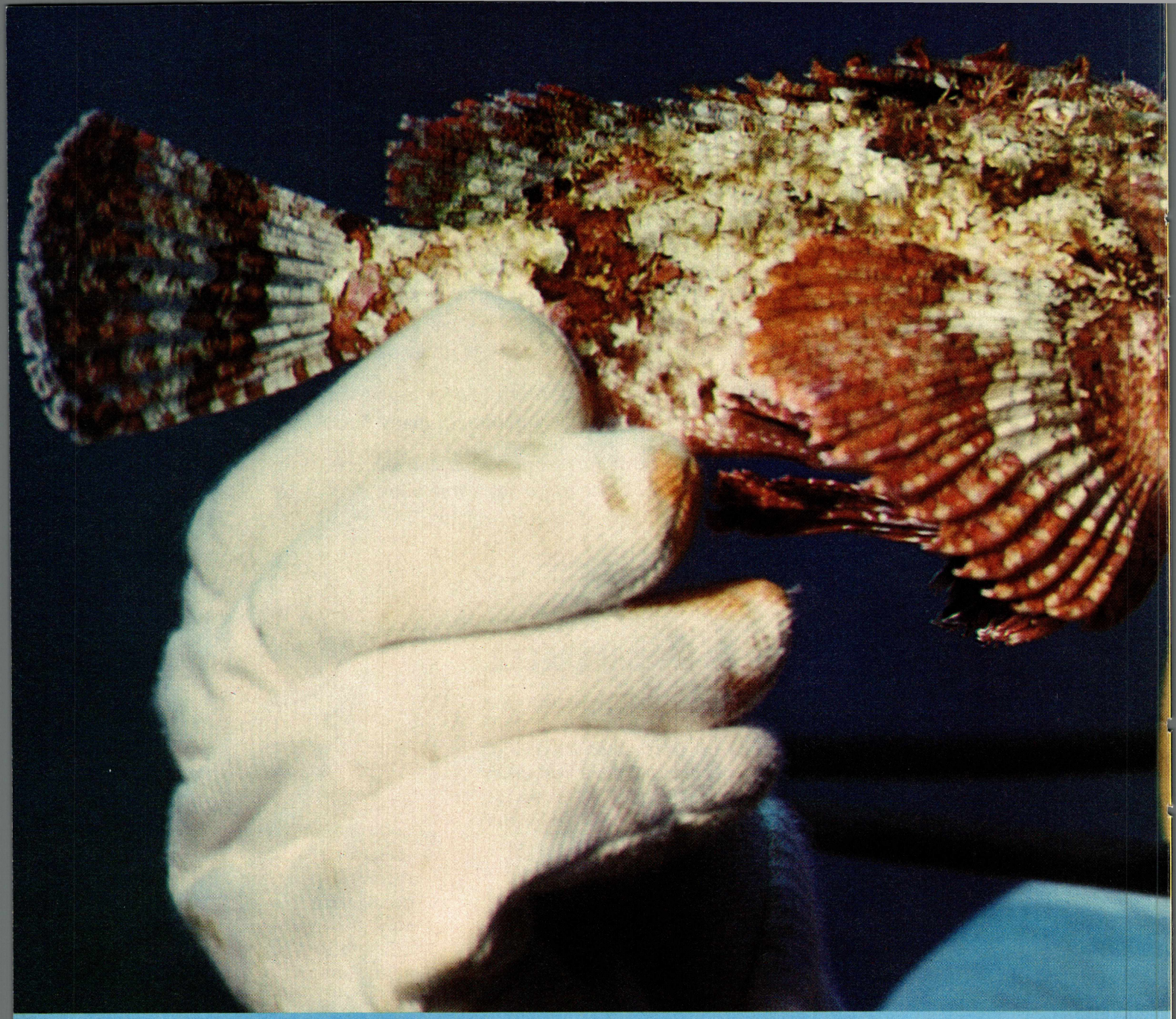
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MASTER OF DISGUISE

THE SPOTTED SCORPIONFISH

BY RICK TEGELER

While attempting to photograph a basket starfish impossibly situated beneath a large coral head in the reefs of Bonaire, I reached for a nearby rock in order to steady myself. To my astonished horror, the rock moved, violently extricating itself from my grasp. I realized, too late, that this seemingly ordinary rock was not a rock at all, but the virulent spotted scorpionfish.

This relatively common reef dweller is one of a species of 350 in the family of Scorpaenidae. At least 57 of their number are venomous. The order is colloquially referred to as "mail cheeked" fishes, so named for the bony plate which, in all of the species, extends across the cheek from the eye to the gill plate. The family is commonly referred to as scorpionfishes, for the scorpion-like sting or puncture inflicted by the dorsal spines. The rock or stonefishes are so named for the common trait of lying motionless on rocky or coral bottoms, masterfully camouflaged from prey and enemy alike.

The Scorpaenidae family, in nature's best beauty-and-the-beast tradition, incorporates one of the most brilliantly beautiful fishes in the seas — the striped zebrafish or turkeyfish (*Pterois radiata*), and also the most repulsively ugly, the stonefish. The stonefish, while rare in most waters, ranks as one of the most deadly creatures in the world, for after its sting and without the recently

photographs by Rick Tegeler

Above, a diver warily eyes a quiescent spotted scorpionfish in 30 feet of water off Cayman Island. Below, another of the virulent fish rests on a sandy bottom between coral heads, a common place to find the species.



discovered antidote, death usually follows a few short hours of intense pain. First aid should be for shock, bathing the wound constantly in hot water.

The spotted scorpionfish (*Scorpena plumieri*), common to most areas of the Caribbean, is less deadly but easily harmful to the unwary. The painful reaction comes from the venom contained in its dorsal spines. Stepping on or grasping this fish when the dorsal fin is

(Continued on Page 80)



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Shipwreck Island

Lake Superior's Isle Royale is a Fabulous Divers' Dream

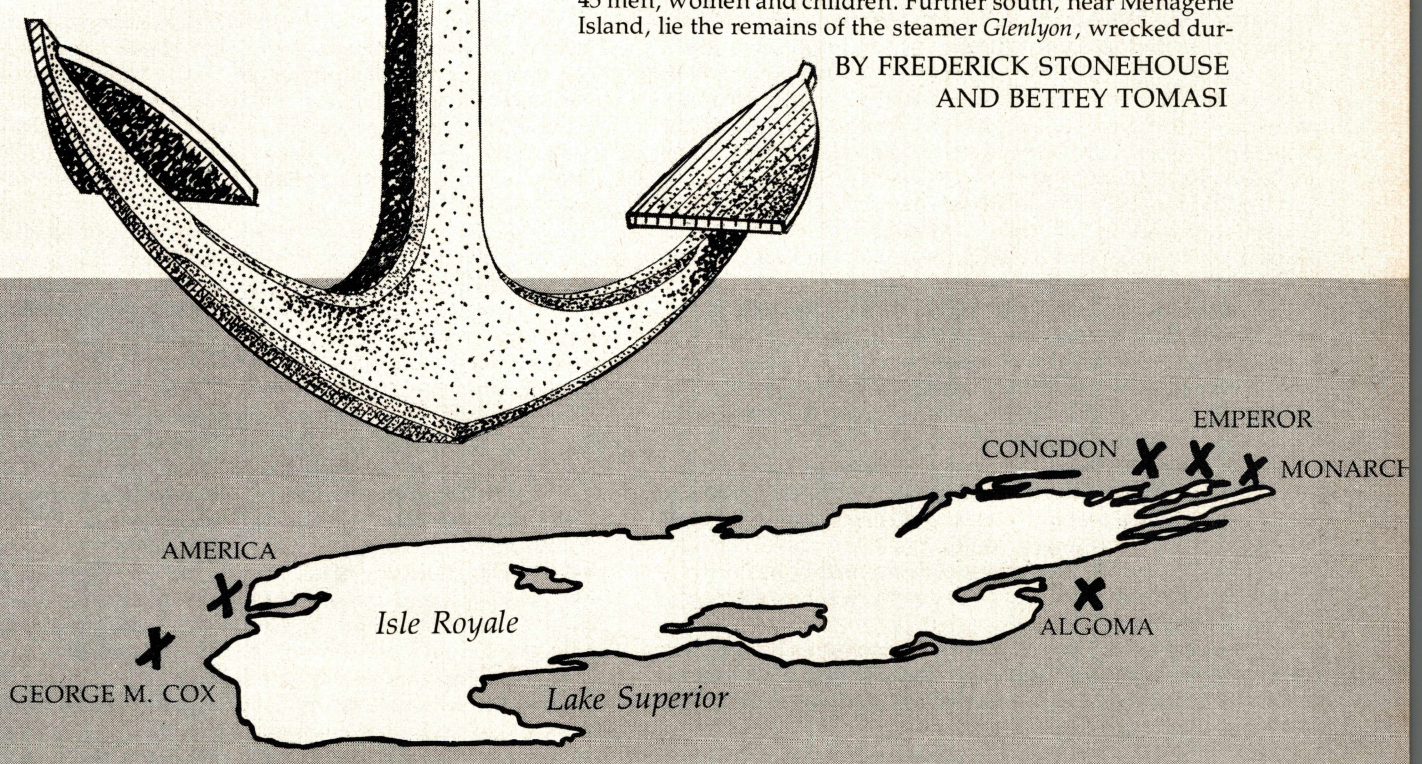
If your forte is wreck diving, and you want to experience the best of the Great Lakes, then Lake Superior's Isle Royale is for you. Nowhere else in the Great Lakes can the diver find as many, or more magnificent wrecks.

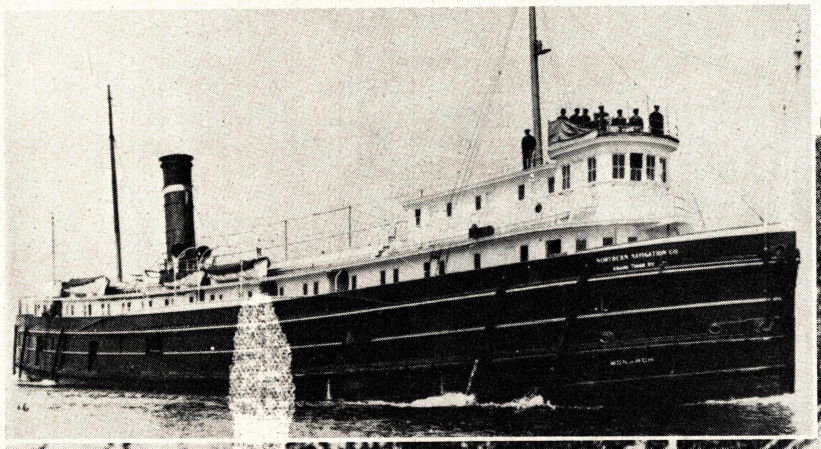
The island is literally ringed by sunken vessels. Off dreaded Canoe Rocks is the mighty steamer *Emperor*. Sunk in 1947 with the loss of 12 lives, this 525 foot vessel is nearly intact. Just a bit southwest is the 532 foot steel ore carrier *Chester H. Congdon* lost in 1918. After standing in a gale on a rocky reef known now as Congdon Shoal, she snapped in two, the bow drifting off and sinking intact in 80 feet. The other portion slid off the reef. Her stern came to rest in 180 feet with the weather deck slanting upward to 20 feet.

Somewhere off Twelve O'Clock Point on the island's west coast rests the Canadian steamer *Kamloops*. This nearly-new steel vessel disappeared near the island in a December, 1927, gale and presented one of the Great Lakes' most inexplicable mysteries. Although some wreckage and bodies were discovered in the spring in the Twelve O'Clock Point area, the location of the wreck and the reason for it remain unknown.

On the east coast, opposite Mott Island, is the wreck of the Canadian Pacific Railroad steamer *Algoma*, lost in 1885 with 45 men, women and children. Further south, near Menagerie Island, lie the remains of the steamer *Glenlyon*, wrecked dur-

BY FREDERICK STONEHOUSE
AND BETTEY TOMASI





photographs courtesy Frederick Stonehouse

ing a ferocious 1924 storm. Although somewhat flattened by years of gale and ice, she still presents an impressive sight.

The south end of the island presents its own collection of wrecks, ranging from the nearly intact passenger steamer *America*, in the North Gap Channel, to the remains of the steamers *Cumberland*, *Henry Chisholm*, and *George M. Cox* on nefarious Rock of Ages reef.

All told, more than 20 odd vessels met their ends in the cold waters surrounding Isle Royale. Many have been found by sport or commercial divers, and others, like the *Kamloops*, are still waiting to be discovered.

Isle Royale is actually a part of Michigan, although the island lies 60 miles northwest of the Michigan shoreline, and only 25 miles from both the Minnesota and Canadian shores. The 45 mile long by 7 mile wide island is a Wilderness National Park. Removal of shipwreck artifacts, or any sort of salvage operation, is strictly prohibited.

One of the most frequently visited wrecks, on Isle Royale's north shore, is the 242 foot steamer *Monarch*. Its wreckage begins in about 35 feet of water and slopes to approximately 80 feet. For the "scrounger" diver it is akin to an archaeologist's dig. The avid scuba diver needs no further incentive to ignore the somewhat bracing 40 degree waters and start gearing up for the dive.

Descending on the line, it takes only moments before large chunks of the hull loom into view. By now the icy conditions are completely forgotten as our minds start swimming with the historic account of the ship.

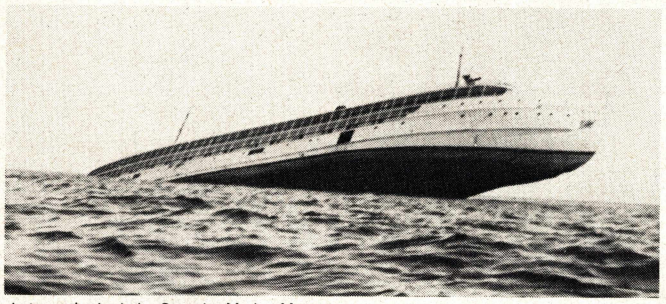
When the 242 foot wooden passenger steamer *Monarch* was introduced into service in 1890, she was the pride of, and flagship of, the Northern Navigation Fleet. No detail had been overlooked in making her one of the finest ships on the Great Lakes. Her cabin and public rooms were exquisitely decorated. Everywhere ornate woodwork and multi-hued stained glass were lavishly used. For 15 years she carried her passengers in a glorious splendor usually reserved for the great Atlantic packets.

In 1906, however, the *Monarch* was retired from passenger services and relegated to the more mundane role of a package freighter. Although she still carried some passengers, it was nothing like the great old days. Nevertheless, the steamer kept all of her old, specially engraved silver service and much of the ornate appointments still remained aboard, as did the pride of being the *S.S. Monarch*.

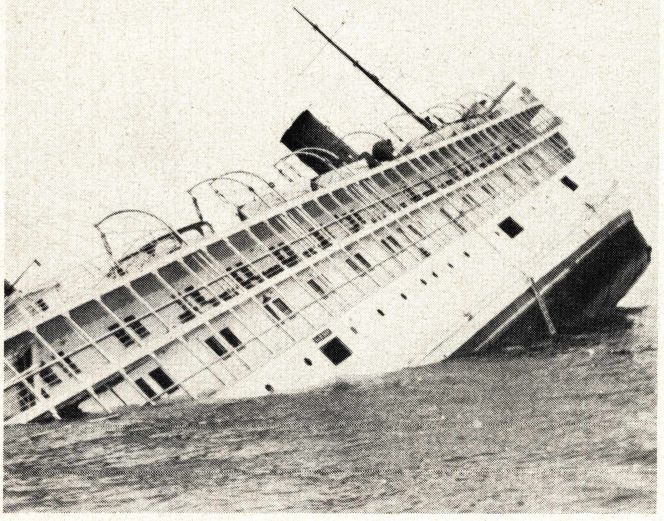
The *Monarch's* day of reckoning came on the late night of December 6, 1906. After leaving Canada's Thunder Bay, downbound for Sarnia with a hold full of wheat and canned salmon, she became enmeshed in the deadly combination of a thick blinding snow squall and a rising gale.

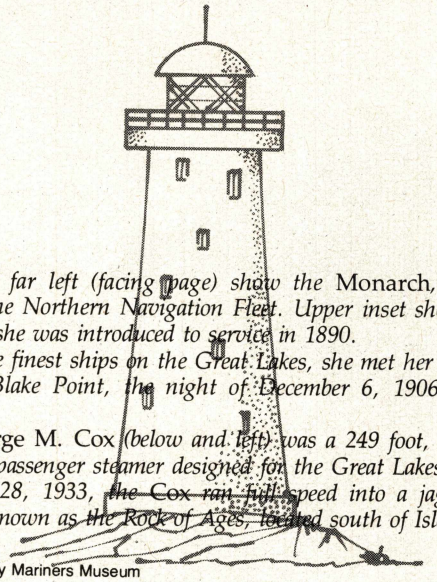
Running by the compass, she tried to battle her way safely past the rocky north tip of Isle Royale. But the cold had apparently affected it and she plowed full ahead into the high rock palisades of Blake Point. Immediately, great torrents of icy water poured into her through her shattered hull.

The *Monarch* was a doomed ship. Again and again the waves of the wild gale swept her decks, causing tremendous damage. Through super-human efforts, the crew managed to reach shore with the loss of only one man. There the men



photographs by Lake Superior Marine Museum

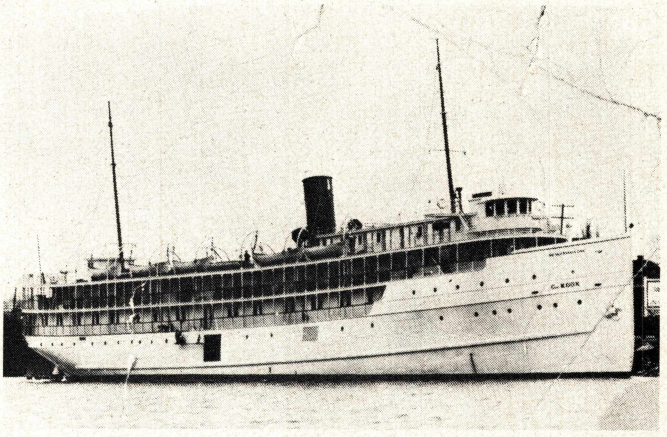




Photos at far left (facing page) show the Monarch, *the pride of the Northern Navigation Fleet. Upper inset shows the ship just after she was introduced to service in 1890. One of the finest ships on the Great Lakes, she met her doom on the rocks of Blake Point, the night of December 6, 1906.*

The George M. Cox *(below and left) was a 249 foot, 1792 ton passenger steamer designed for the Great Lakes Tour trade. On May 28, 1933, the Cox ran full speed into a jagged rock reef known as the Rock of Ages, located south of Isle Royale.*

photograph by Mariners Museum



huddled in the below zero cold for two days until the Passage Island lightkeeper spotted their bonfire and summoned aid.

While most of the people were saved, we now found ourselves looking at the vast expanse of wreckage which is one more of a merciless sea's legacies to today's sport diver.

We hold a quick hand signal conference at the anchor to determine which direction we should take. Since a northwest wind has determined our anchoring position, we decide on a right turn at the anchor which takes us further down the sloping tangle of metal and pipes. Emerging before our faceplates are still more wooden remnants, such as the well-defined keel with bearings which once cradled the shaft which drove the prop. An anchor nestles between two huge boulders leaving only one fluke and shaft exposed.

Our scrounging instincts are rewarded by an occasional ancient beer bottle, a chipped dish and an ornate, if a little twisted, copper piece of a wall decoration which we presume to have come from the dining area. The latter lends itself, gracefully, to a more modern plant hanger.

Since we are now in 80 feet of Lake Superior and have been submerged for close to 30 minutes, we glance at not only our own pressure gauges, but at each other. That reading, and the fact that our wetsuits seem to have quit working, cause a thumbs up signal and we return to the surface. Back on the boat we are astonished, again, at the exchange of observations by the divers. Each of us had seen the *Monarch* in a different light. But, one thing was unanimous. All were happy!

Putting memories of the *Monarch* in our log books, we decide there is still time to weigh anchor and make the five-hour run at our vessel's rather limited speed of nine knots, to the southwest end of the island. The early morning hours will find us meeting the challenge of the *George M. Cox*, smashed near Rock of Ages lighthouse.

The *George M. Cox* was a 259 foot, 1792 ton steel-hulled, passenger steamer designed for the Great Lakes Tour trade. Built in 1901, she worked at her chosen calling until 1932 under the name *Puritan*. During this period, she made frequent trips over Lake Michigan from Chicago to the popular resort of Mackinac Island. Aboard were hundreds of gay vacationers out for a health-giving outing on the inland seas.

In 1933 the *Puritan* was purchased by George M. Cox, a New Orleans ship owner and added to the assets of his newly formed Isle Royale Transit Company.

Cox intended to use his new steamer on a special passenger run from Chicago to Canada's port city of Fort William. This was the year of Chicago's famous Century of Progress Exposition. Cox felt his steamer would have no trouble filling with eager exposition passengers.

The *Cox* left Chicago on her maiden trip on May 25, 1933. On board were 722 people, almost entirely crew or non-paying friends of the owner. At Fort William, meanwhile, a brass band was assembled at the dock eagerly anticipating the *Cox's* arrival. But celebrations were not to be.

May 28 found the *Cox* knifing her way through a thick fog. She was *almost* on her proper course for Fort William. Acually, she was half a point too much to the west. This fractional error was to be her downfall.

With a tremendous crush, the errant steamer ran full speed





At left, a lonely Isle Royale channel is somber and peaceful under a slate gray sky. Isle Royale is literally ringed by sunken vessels. Her reefs are so treacherous, the best diving is done from small craft (below left) able to weave around the deadly rocks. The 57 year old tug W.R. Busch (below) is one of the classic Isle Royale dive boats.

photographs by Frederick Stonehouse





into the jagged rock reef known as Rock of Ages. Located several miles southwest of Isle Royale's southern tip, this sentinel of death had already landed the paddle wheeler *Cumberland* in 1877 and the wooden steamer *Henry Chisholm* in 1898.

The *Cox* struck the reef with such force that her engine was utterly ripped from its mountings. The entire forward half of the steamer was forced high in the air. Diners were thrown to the deck in a clatter of tables, chairs, and smashed china.

Luckily the seas were calm and a successful abandon ship drill was carried out. The fortunate survivors spent a crowded night in the close confines of nearby Rock of Ages light. The fog had prevented the steamer pilothouse crew from seeing the light.

The *Cox* was a total loss. Soon after the wreck, a halfhearted official salvage effort recovered part of her cargo and fittings. But eventually she was stripped of anything of value by the local commercial fishermen.

Within months, the fury of a Superior norther blew the *Cox* off the rocks and into the realm of the diver.

We were among the lucky divers when morning dawned sunny, with calm seas, on an island infamous for its rough and foggy moods. After a hasty, if not too tasty, Coleman stove breakfast, we left our dock haven at Grace Island in the north channel and chugged our converted fish tug the several miles to Rock of Ages reef. During the tedious gearing up process, we tried to remember from the previous year's vacation, just where, and on which side of the reef, various sections of the *Cox* lie. Divers who are familiar with the area have been known to differ, as the same reef harbors the wreckage of the sidewheeler *Cumberland*. It is our belief that, after a summer storm which broke the already broken ship in two, her stern slipped into about 80 to 90 feet of water on the reef's southwest side. Her bow can be viewed in 15 to 30 feet on the crest of the reef, still sporting the bow anchor and chain.

Swimming into deeper water to view the stern, we are greeted along the rocky ledge by strewn bits of wreckage. At about 70 feet we are literally startled by the immensity of the boilers which loom up suddenly. The divers take an extra gasp of air before beginning their exploration of this steel-hulled relic — another of Lake Superior's numerous triumphs over man's feeble efforts at conquering her.

This stern portion lies partially collapsed on her port side, while her starboard screw is still very prominent. A baggage wagon from a bygone era rests on the bottom nearby, bearing mute testimony to a havoc wrought as the ship's two sections wrenched apart and settled into two different liquid graves. Thirty minutes of bottom time have evaporated in what seems like five. It is time to return to the surface to compare the inevitable notes which will, as always, cause much discussion, controversy, arguments, and mutual agreements. Once again we have been privileged to share our common obsession — Lake Superior wreck diving!

MOLA MOLA ENCOUNTER

BY BILL BRUGGER

It happened on the Fourth of July. My brother, Dan, two dive buddies (Joyce Gulvin and Gary Lee) and I were six miles out in the Gulf Stream off Miami, Florida. Joyce spotted the weird-looking thing. It was an ocean sunfish, and it seemed unperturbed as we glided up with the engines off.

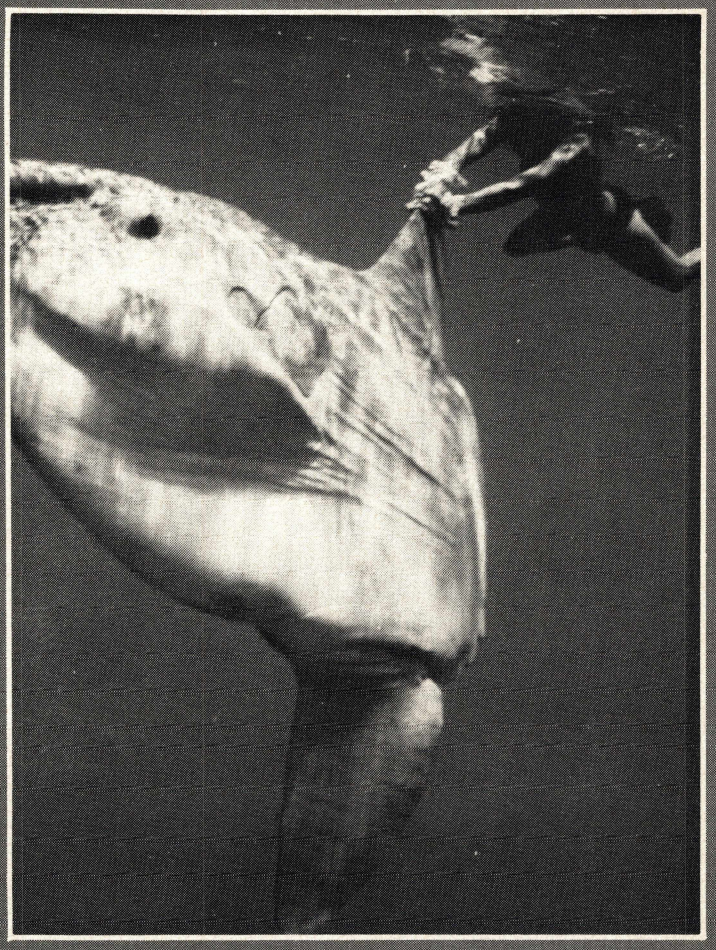
The fish was lying on its side on the surface, its two small, flabby-looking fins moving lazily. It appeared to wait for us as we got ourselves and our camera gear over the side of the boat.

Joyce was the first person up to the fish and it made her look small in comparison. It must have been at least six feet in length and weighed about 500 pounds. It seemed remarkably unafraid and docile.

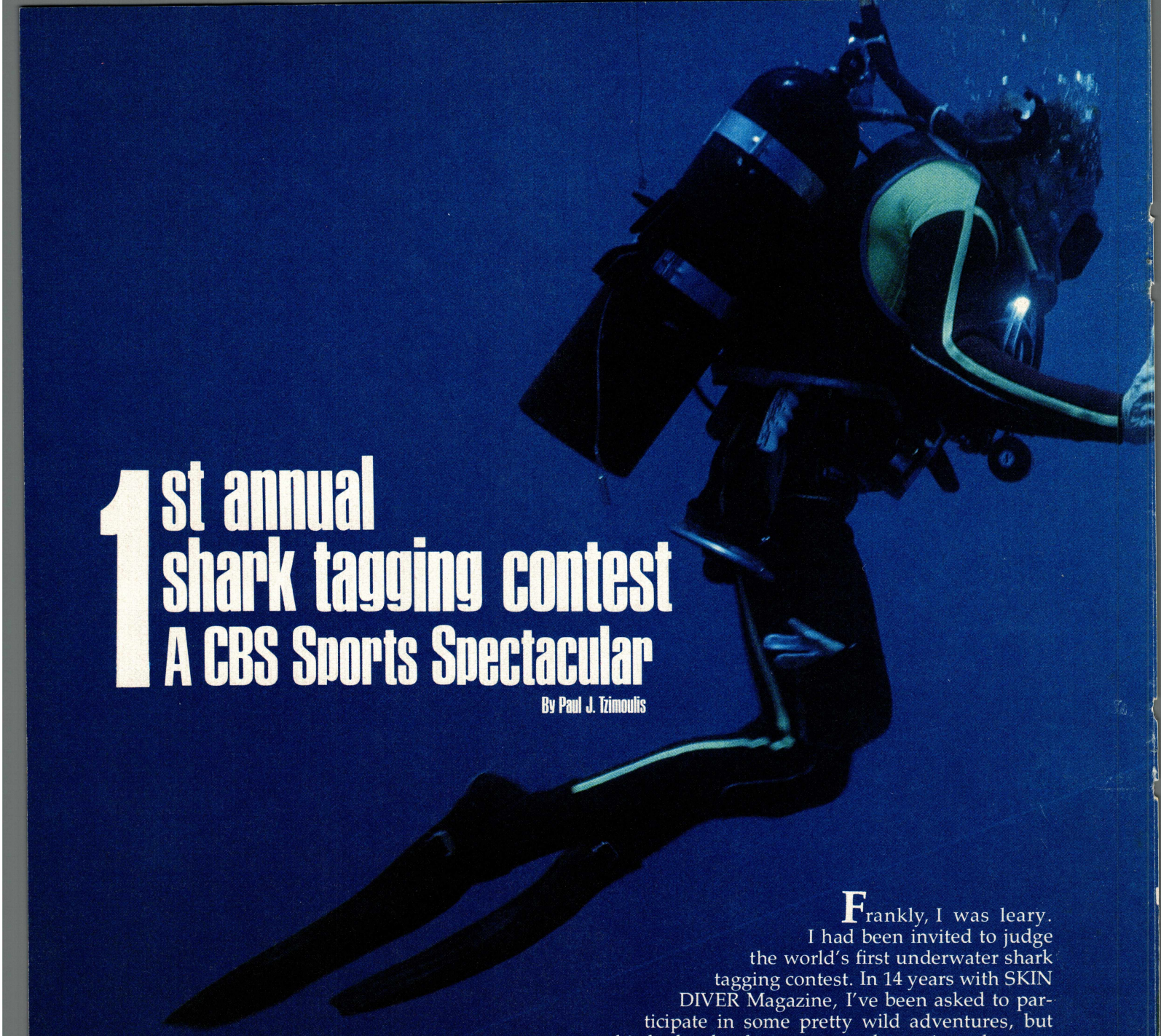
Sunfish are mostly head, with a small triangular fin on the top and bottom of their bodies. They are nearly twice as high as they are long. This one was dark gray on top, with silvery-gray sides and a dirty white belly. Its skin was very slimy and rubbery, with tiny, needle-like projections similar to those found on sharks. It had a small, beak-like mouth surrounded by a pink growth resembling algae. The eyes were located on either side of the body, right in line with the mouth. The relatively small gills were located a couple of inches behind and below the sunfish's eyes.

The sunfish posed for pictures and let us play with it for about 20 minutes. Then it gave us a bored look and slowly headed down into the crystal clear depths of the Gulf Stream. I grabbed a breath of air and followed to 50 feet before waving good-bye.

The first available day after this encounter, I went to the Marine Science library to look up the saltwater sunfish. To my surprise, there were only a few books offering any information, and this was mostly from voyages and sightings reported and recorded in the early 1900's.



I did learn that the sunfish is a member of the family Molidae and the species is named Mola Mola. It is a wanderer of the high seas and is not common. It favors the warmer temperature areas of the Atlantic and Pacific oceans. A poor swimmer, the sunfish is often at the mercy of currents and tides. Anal and dorsal fins are soft and not spined. The caudal fin is very short and has only 16 to 17 vertebrae. The teeth, in both the upper and lower jaw, are fused together to form a beak. Sunfish eat squid, jellyfish, ctenophores, various crustaceans and algae. They grow to an average size of three to six feet. The largest reported sunfish was 11 feet long and weighed 2000 pounds. Sunfish are not considered edible. When placed in an aquarium, they will swim endlessly against the wall in search of a way out.



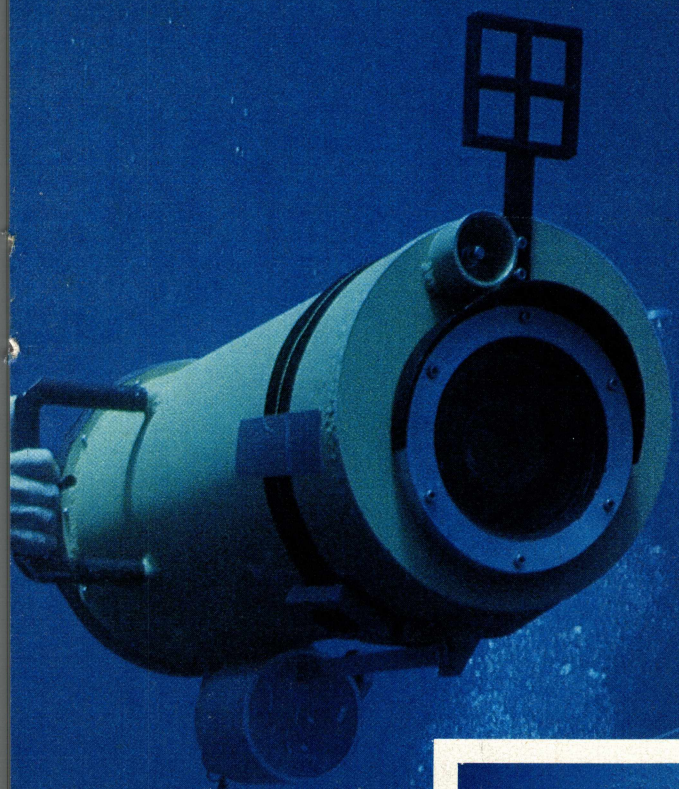
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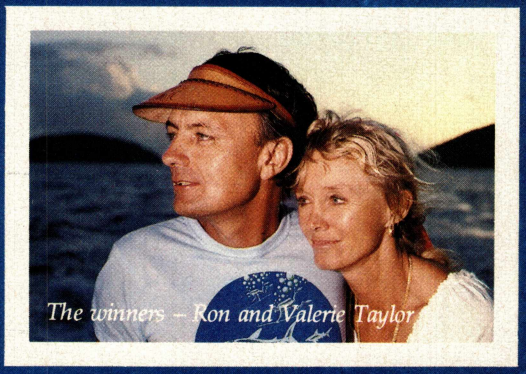
By Paul J. Tzimoulis

Frankly, I was leary. I had been invited to judge the world's first underwater shark tagging contest. In 14 years with SKIN DIVER Magazine, I've been asked to participate in some pretty wild adventures, but this had to be the strangest, the zaniest, the most bizarre stunt in diving history. How could anyone possibly make a serious competition out of sticking marine fishery tags into wild sharks in the open ocean?

Yet, I had to admit to myself, this competition possessed a fascinating appeal. More out of curiosity than conviction, I tentatively agreed and requested more details. Next came a telephone call from Stuart Goodman, the man who conceived and developed the shark tagging contest and who would be producing a television show based on the event. Bubbling with enthusiasm, Stu explained the details and said that CBS television was sponsoring the event. Stu went on to list a number of well-known divers who would be involved in the competition. Ron and Valerie Taylor from Australia would be contestants. Working behind the scenes on the competition were many of St. Thomas' best-known names in diving: Bill Dexter, Armando Jenik, Gary Deering.

photograph by Paul Tzimoulis



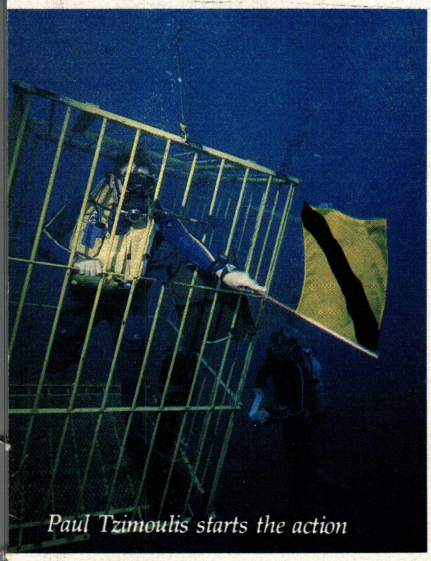


The winners – Ron and Valerie Taylor

CBS SPORTS SPECTACULAR

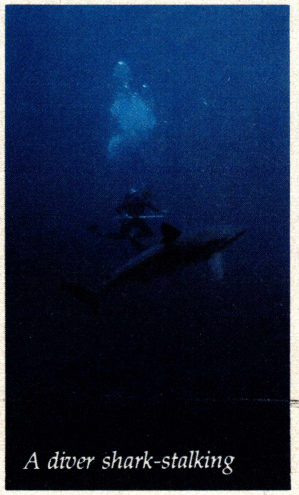


Ron and Valerie take aim as a CBS cameraman records the action



Paul Tzimoulis starts the action

photographs by Geri Murphy



A diver shark-stalking



An efficient boat crew lowers the shark cages



U.S. competitors Howard Hall (left) and Gordie Waterman.



Dana Fagan (left) and Dusty Pearsall, the Caribbean team.

But the clincher was the prize money. Every contestant would be guaranteed $1,000 to participate in the contest — plus $2,000 to the winner. There aren't too many places in the underwater world where a diver can earn $2,000 for ten minutes work. It figures out to $200 per minute — pretty good money in anybody's book! Serious prize money made this crazy contest a much more respectable sporting event.

The rules and procedures for this unique event were simple and to the point. The competition would consist of three separate dive teams. Each team was made up of two divers: one designated as the tagger and the other as support diver. The tagger was to fix a Marine Fisheries tag in the dorsal fin or body of the shark, using a custom made pole spear fitted with a quick release head. The support diver would carry an additional pole spear for a second shark tagging, as well as serve as safety diver. The support diver's job also included enticing the shark in for a hit.

Each team would be allowed a total of ten minutes to tag as many sharks as possible. They would be given a total of 12 tags, all of which were coded with special color streamers to better identify a positive hit. Upon a flag signal from the judge, the competing team would enter the water and the clock would start ticking. Timing was monitored by both the judge underwater and the television cameras on the surface.

The competition area was approximately 200 feet in diameter with bottom depths ranging from 45 to 80 feet. The centerpoint of the circle was a rocky pinnacle which served as both an underwater reference point and a safety zone marked by a shark cage. The competing teams were required to stay within a 100 foot radius of the cage and never attempt a shark tagging beyond the range of the television cameras or the visibility range of the judge.

The sharks would not be harmed in any way; the competition was restricted to tagging them with a small Marine Fisheries tag, identical to the ones used by scientists the world over. In fact, the tags were officially recorded by Dr. Ed Towle, president of Island Resources Foundation, Inc. This was to be the first time that sport and science joined in an unusual effort to study the migratory habits of Caribbean sharks. If a tagged shark is caught at a later date, the fisherman will send the tag to the Marine Fisheries Service along with vital data on where and when it was caught. In 1977, some 3679 sharks were tagged and released. The longest known distance traveled by a tagged shark — a blue — was a record 1400 miles.

The chosen site for the First Shark Tagging Competition was St. Thomas, U.S. Virgin Islands — not because of an abundance of sharks, but rather because of the excellent island facilities and the availability of support vessels and the skilled underwater technicians required for the complex television production. Its reputation for clear, warm tropical waters provided an additional allure since good underwater visibility was a critical requirement for the televised sport event. The actual site for the shark tagging activity would be the distant island of Greater Tobago, 15 miles from St. Thomas Harbor and a considerably safe distance from the normal tourist dive areas and local beaches.

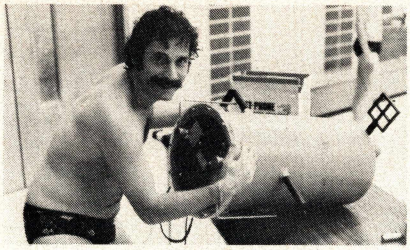
Official headquarters for the competition and CBS television crew was the St. Thomas Diving Club, a new 16 room harborside resort designed exclusively for vacationing scuba divers. The brainchild of Dick Doumeng, a well known St. Thomas hotelier and avid scuba diver, the St. Thomas Diving Club now occupies a recently renovated 18th century landmark which once served as the Russian Consulate. The recently opened dive resort features a newly built scuba shop, large volume air station, 100 foot long saltwater swimming pool and a private pier for the newly built *Goldilocks*, a 42 foot custom dive boat owned and operated by Armando Jenik. The unique resort can accommodate up to 32 divers and offers a very attractive one-week dive package featuring a surprising variety of dives around St. Thomas as well as a weekly visit to the nearby wreck of the *RMS Rhone*.

By June 1st, more than 80 people had gathered in St. Thomas to participate in the shark tagging event. A sizable segment of this group included television technicians and the CBS production crew that would be covering the event under the direction of Bernie Hoffman, executive producer and director of the show. There would be three underwater camera men covering the event from different angles and viewpoints. The camera teams included: Ralph White of Hollywood, California; Pierre Bonnescuelle de Lespinios of Ft. Lauderdale; and Armando Jenik of St. Thomas.

Underwater safety divers and support crews were another large segment of the competition and were comprised mostly of the top divers in the St. Thomas area. They included: Gary Deering of John Hamber Water Sports; Palmer Williams of Aqua Action and Bill Otto of Ocean Adventures. Also in attendance were representatives from the Metzeler Inflatable Boat Company, U.S. Nemrod and Anchor Marine, Inc,.

Four large vessels were utilized for surface support. The 89 foot dive yacht, *Pelorus Jack*, would carry the largest complement of people and serve as the video taping center for the show production. More than one-quarter million dollars in television monitors and video taping equipment would be housed in the air-conditioned salon of this vessel. The 42 foot *Caribe Diver* served as a work boat and dive platform for the underwater camera men and safety divers. The *Goldilocks* carried the competitors and judge for the event. The 38 foot *Sea Trek* served as press boat and personnel transport for people moving to and from the dive site. Several Metzeler inflatable boats were also utilized for transportation.

It was indeed a mighty armada which moored in a quiet cove on the protected side of Greater Tobago Island. From a technological point of view, the shark tagging competition would be a historic moment in the evolution of TV coverage. It would be the first time that an underwater competition would be fully documented with underwater television cameras instead of movie equipment. And it was this challenging



CBS producer Stuart Goodman examines one of the two custom-designed underwater housings for the RCA TK-76 self-contained portable television cameras.







The shark tagging device (left) does not harm the shark. Ron and Valerie Taylor (above) stalk their prey. U/W camera man Ralph White (in cage) records the action.

technical aspect which had interested CBS the most.

To accomplish the feat, producer Stu Goodman commissioned the construction of two custom-designed underwater housings for an RCA Model TK-76 self-contained portable color television camera. Designed and constructed by Jon Wood of Twin Rivers Engineering, these underwater housings would not only permit continuous underwater TV coverage, but also allow for power zoom shots during the actual competition. Costing more than $42,000 each, the TK-76 video cameras would produce broadcast quality video tape with a special color intensification capability which eliminated the need for underwater movie lights.

In addition to the RCA units, a lightweight, compact Rebikoff/Alpha DR-630 color television camera was also employed for greater mobility during moments of high speed action. Weighing less than 28 pounds, the Rebikoff unit allowed maximum mobility. All three cameras were connected to video recorders aboard the *Pelorus Jack* by means of umbilical cords fitted with video coaxial cables.

After six months of difficult planning and intensive preproduction effort, the day of the competition arrived. Bristling with the most advanced video taping equipment, the small armada of dive vessels stood ready to document an onslaught of hungry sharks and high voltage action.

Much to the chagrin of the camera men, director and divers, the appointed hour of competition became a day of disappointment. Everything was ready — everyone was present, the competitors were poised for action — but there were no sharks! Hours of diligent chumming, and liberal amounts of bait proved fruitless as narry a fin sliced the surface. For some unexplained reason, the sharks did not appear.

A second day of baiting and waiting produced equally dismal results. There were at least a dozen different theories as to why the sharks were not coming in. Ron Taylor was convinced the area had been over baited and that the sharks around Greater Tobago were no longer interested in the food offerings. Armando Jenik felt that the noise produced by four large vessels and 80 people, proved too disconcerting for these sharks who normally lived in peaceful tranquility. The highly sensitive sonar organs of these sharks could certainly pick up a wide variety of alien noises, ranging from the mechanical hum of generators to the various thumpings and clankings normally accrued aboard large vessels. There were also lively debates about the type of chum which might produce the best results, as well as the quantity and rate at which such bait offering should be distributed. New bait was ordered and new tactics applied, but to no avail. Still no sharks.

By the third day, the situation had grown tense. Almost all of the money had been spent and time was running out. The video technicians and CBS people would soon have to leave because of other show commitments. Finally, a decision was made to change locations from Greater Tobago to Hans Lolick Island, a few miles to the west.

The new location proved equally void of shark activity and, once again, the shark cages were raised and the dive boats relocated at an ocean pinnacle off Outer Brass Island. By now, the number of well wishers and supporters had dwindled from 80 to 35. The *Pelorus Jack* was forced to depart because of other commitments and now the crew was working from the *Caribe Diver, Sea Trek* and the *Goldilocks*. The production was two days past deadline with only one day remaining for a possible competition. It would be now or never.

Chumming commenced in the early morning, while the competitors and underwater crew patiently waited for the first sign of sharks. The hours dragged on and, by three in the afternoon, everyone was silent. The divers were discouraged but still resolute for there was an outside chance of shark activity in the late afternoon. According to the local spearfishermen, the sharks on this side of St. Thomas normally did not feed until sometime after 4:00 pm.

The monotony continued, as there was little to do except wait. Valerie Taylor sat on the bow of the *Goldilocks* penning a few notes in her diver's log. Gordie Waterman engaged several of the boat crew in a lively game of backgammon. Others slept, read books, or retreated into their inner world of personal thought. It seemed as though every possibility had been exhausted, every theory fully debated and still no sharks. There was nothing left to do except quietly wait.

At exactly 4:25 pm the first shark made its appearance. Dusty Pearsall and I happened to be snorkeling the competition site when Dusty pointed and gave a whoop through his snorkel. Looking in the direction he indicated, I sighted one of the happiest visions of the week. Here was a six foot springer shark lazily winding its way up the chum slick in search of the food source. It was a magnificent creature in appearance and seemed to be cruising at a slow and deliberate pace, almost oblivious to our presence. I raced back to the boat to gear up and prepare for the competition.

By the time I reached the stern platform of the *Goldilocks*, the competitors and underwater camera men were already beginning to suit up. The decks of the three dive vessels had been transformed into a bustle of rapid, but coordinated activity. Timing was tight, for it was almost 4:30 in the afternoon and the sun's rays were on the wane. We had a little more than an hour of useable daylight before it would be too dark for the video cameras. Fortunately we were using video equipment which would allow us to film underwater even though it was late afternoon.

The competing teams had already drawn lots for position and the Australian team would be the first into the water. Ron and Valerie Taylor stood poised at the stern of the *Goldilocks*, as I scanned the water beneath me for a sign of the shark. The underwater camera men were already in the water and in position to film the action. When I finally caught sight of the shark, I discovered there were now two instead of one. I waved the starting flag and Ron immediately jumped in, quickly followed by Val. Within seconds, they were on their way to the bottom, swimming directly toward the action. Val-

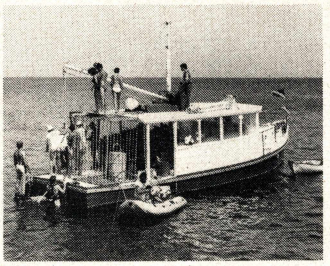
photographs by Jan Schuerholz





Above left, executive producer and director of the Professional U/W Sportsmen Competition, Bernie Hoffman. Below left, CBS shark tagging producer, Stuart Goodman. Above, SDM editor-publisher, Paul Tzimoulis (left) with shark expert Ron Taylor.





The Caribe Diver *(above) served as a work boat and dive platform for the U/W camera men and safety divers. The support divers and crew (left) were St. Thomas' best.*

erie quickly took the lead as support diver for the team. She carried a small tuna in her left hand, with which she hoped to lure in the sharks. They moved down current of the boat, following the path of the chum slick as they felt this was the area in which the sharks were most likely to congregate.

Ron and Val encountered their first shark at a depth of 60 feet. Stretching his pole spear elastic to its limit, Ron quietly moved to Val's right side as they drifted closer to the curious springer. Although *Carcharhinus springeri* is not a shark species classified as a maneater, it is a shark which demands considerable respect and requires skillful handling at close range. Since no one had attempted to tag one of these creatures underwater before, none of us had any idea of how the shark would react. Of all the people in the world to attempt such a feat, Ron Taylor was certainly the most qualified, but even he had no way of knowing how this particular species would react. As Valerie waved her tuna bait in the current, the springer shark ventured closer and closer to the food. When the shark drifted into pole spear range, Ron lined up and released his tagging spear, firmly planting his first tag in the center of the shark's dorsal fin. A quick snap of its powerful tail and the shark disappeared into the blue. Ron had scored two points within the first three minutes.

By now, several more sharks had arrived, cruising slowly in and out of view as they sought the source of the chum scent. At one point, I counted three sharks in full view and suspected there might be a total of five within the immediate area. The sharks exhibited no particular concern or curiosity at the presence of divers in the water. They seemed far more interested in the fish bait, for this was more in line with their natural diet. It was only when the tagging team closed in on a particular shark that it would take notice and begin to move away. The sharks did not want to be in close proximity of the divers and maintained a 10 to 20 foot distance.

Ron and Valerie continued to move down the slope of the reef, further out into the chum slick. At 80 feet they were able to entice a second springer shark into closer range. It was another six footer. Again, Ron planted a tag at the base of the shark's dorsal fin, scoring an additional two points. The shark turned and left so quickly that the colored streamer slipped off, but the tag held fast. Ron now had piled up a score of four points as he moved in on a third shark in the remaining minutes of his competition time. Unfortunately, the third shark was more nervous than the other two and fled just before Ron was about to release his pole spear. Reluctantly, I signaled time up and we all returned to the boats.

Returning to the surface we were greeted by a feverish pitch of excitement. The video crew had monitored and taped the entire sequence of events and everyone was overjoyed with the results. Meanwhile, the U.S. team was anxiously preparing for the second round of competition. Gordie Waterman and Howard Hall huddled close together at the stern of the boat quietly reviewing their game plan. Within minutes we were back in the water for the second phase.

As I looked down from the surface, I could see that the sharks had moved into the center of the competition area, and that one large, eight foot springer shark was now cruising directly under the boat. I gave the start signal and Howard and Gordie hit the water almost simultaneously. Instead of heading toward the chum line, Howard's attention was riveted on the big shark circling the top of the pinnacle beneath the boat. This shark seemed more wary than the others and moved off as the divers descended.

Another shark cruised into the area, and Howard immediately changed direction. The sharks seemed to be circling a wider area now, leaving little opportunity for concentrating the competition at one singular focal point. The minutes were ticking by and Howard grew anxious. About mid-way into the ten minute competition time, Howard managed to close in enough for a shot. Although the springer was on the run, he planted a tag solidly halfway between the dorsal and tail. A body shot counted for one point. As with the others, this shark wasted little time hanging around. Howard stalked still another but could not get close enough for a shot. His time was up before a second tag could be launched.

By the time the Caribbean team entered the water, the big eight footer had returned. Although still wary of the divers, this big fellow was indeed hungry and intent on finding the source of the chum. Dusty Pearsall spent several minutes stalking the big springer but could never close in. The sharks were now moving faster and making a wider berth around the divers. The competitors had to swim hard in order to keep pace with them.

Perhaps the most frustrating and confusing aspect of the competition was having to shift attention from one shark to another. Dana Fagan finally had an opportunity to line up a springer in the closing minutes of the competition and landed a solid tag on the shark's body. Final score for the Caribbean team was one point.

It was a clear-cut victory for the Australian team. Ron and Valerie Taylor walked away with the event by turning in an impressive score of four points. Their past experience in shark handling and spearfishing competitions proved to be an invaluable asset for this unique event.

After months of planning, and days of dreary waiting, the First Annual Shark Tagging Competition ended on a victorious note. That final hour in the late afternoon of June 5th turned out to be one of the most exciting underwater experiences in dive competition of any kind. And, fortunately for Stu Goodman, it was all documented on video tape. The show is scheduled to be aired as a CBS Sports Spectacular, Saturday, September 16, 1978.



TREASUREMASTER AMPHIBIAN / SURFMASTER

White's Electronics latest metal detectors

BY JAMES SEELEY WHITE

There is something new under the sun, and under the water. White's Electronics of Sweet Home, Oregon, has released two new metal detectors for use on land or beneath the sea.

"So?" one might ask, "Is that new? We've had underwater metal detectors for years." And, this was exactly what aroused my curiosity when Ken White wrote asking whether I would like to field test the new units.

At first inspection, the Treasuremaster Amphibian was totally unlike the old BF-8 Goldmaster Amphibian or the current TR-8 that also carried the Amphibian name. Both previous models suggested dive lights since they were built into dive light housings. The new Treasuremaster has a tiny circuitry container, smaller than a pint jar, and appears more like a wand with a handle at one end and a loop at the other. First point of significance — it is smaller and lighter than past models.

While the older models utilized two controls, the Treasuremaster has only one. It turns the set on and adjusts the balance. Second advantage — the new detector is simpler.

But, the instrument was so small and so simple, would it work? The handiest way to try it was in the children's sandbox. After burying a quarter and a dime, the detector was activated and the loop passed over the metal objects under varying depths of sand. The findings were a little over three inches (8 cm) and four inches (10 cm) maximum depth range.

Curiosity did it to us about that time, and we just had to take the circuit box apart. This is accomplished simply by unscrewing the cylinder from the affixed jar lid. An O-ring seal protects the contents. Within is the standard nine volt transistor battery, that provides the power, and the circuit board. To get at the circuits, we had to remove the activator-balancing knob and rotate the nut that held the switch in place. Then the whole thing slipped out — for servicing, or just for looking as we had done. It went back together just as simply, and it still worked.

By the time I had a team ready to head for the water, the second unit had arrived. This was the Surfmaster, intended for use in shallow water, in the surf, or in extremely wet or dusty conditions. Actually, it looked just like the Treasuremaster Amphibian except for a longer, telescoping shaft and arm rest. In fact, the instructions of the two are identical.

Since the two units were the same in terms of circuitry box and loop, we took both of them over to Oregon's Willamette River for some underwater tests. There was a spot nearby where chains, hooks, cables, and dogs from log rafting had been evident on a previous dive, so we knew there would be metal of various sizes at differing depths in the silt of the river bottom.

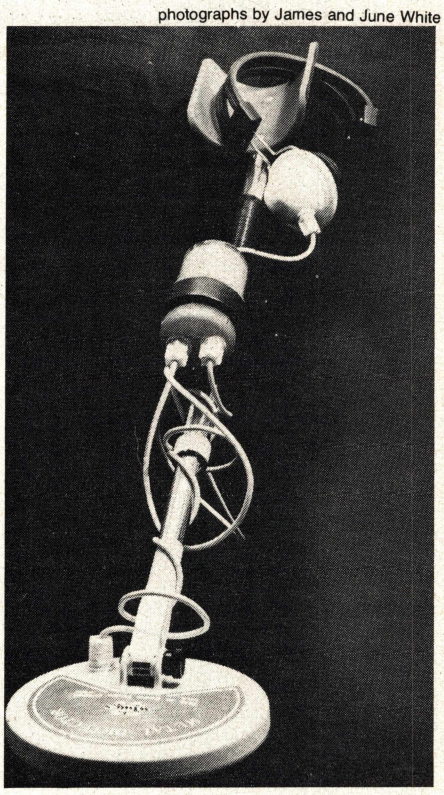
As the divers prepared to take the detectors down, the earphones became important. Previous styles had incorporated an earphone in a wetsuit hood, or in a band of wetsuit material. In the first instance, the hood was awkward and uncomfortable placed over the hood attached to my jacket. And, the band kept getting tangled up in the facemask. With the Treasuremaster Amphibian and Surfmaster models were earphones mounted on clips that slipped on over the hood and mask. This was the third really important new facet — an earphone that could be slipped easily over the hood and mask, and just as easily slipped off underwater and passed to a dive buddy.

Beneath the water, a fourth new feature became apparent. Mounted on the wand or shaft, the loop of the Amphibian stood out beyond the loop location of the older models. In fact, the light loop could be swept back and forth in very convenient search arcs. The area covered in the same amount of bottom time was substantially greater.

But now we get to the bottom line: what goes into the goodie bag. From the beginning, both new units were locating objects ranging in size from brass buttons to chains. The Surfmaster, with its longer shaft, was not as convenient, but both were working with just as much sensitivity under water as in the sandbox.

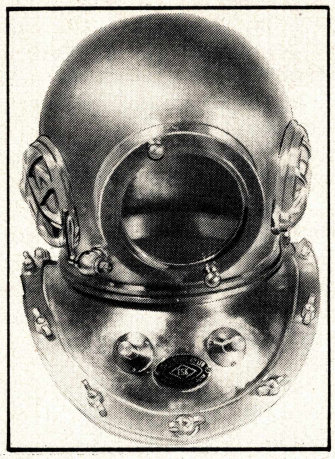
We had been down to about 30 feet (10 meters), but didn't like the darkness and sunken logs, so began working the slope along the edge. There the Treasuremaster began to pay off. First, it located a couple of spoons, then a padlock. Down in the mud, alongside the lock, were more (though non-metalic) items to bring back: a glass insulator, and a bullseye lens.

photographs by James and June White

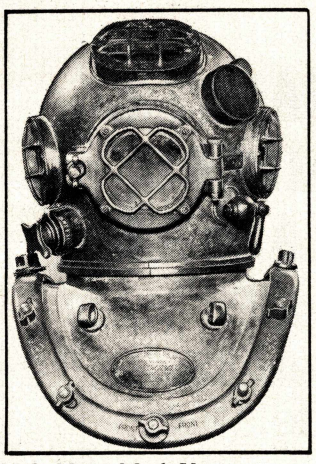


We returned to the dive boat to evaluate our finds. The glass insulator was the first item out of the bag and into the sunlight. What a surprise. "Pettycoat, Patent May 2, 1893," stood out in large letters. We had found a relic. Next, the lens was wiped of its mud — and discovered to be a bullseye lens from a railroad signal light, with markings of " S. O. Corning Patent 10-10-05." From the bottom of the bag came the first to go in, the spoons and the padlock. Brass, it was, and beautifully preserved from lying buried in the mud for many years. A brass gate slid to one side to reveal the keyhole. As the mud was wiped from the shackle, stamped letters appeared,

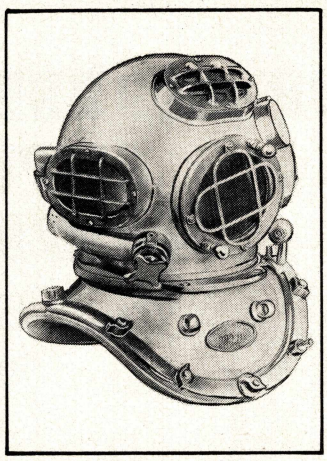
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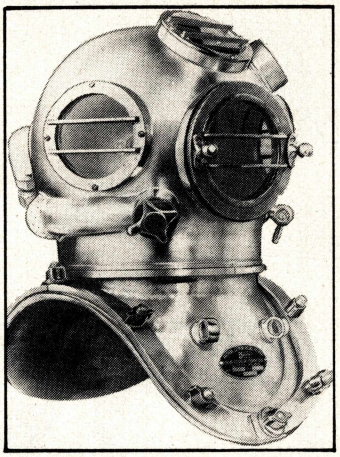
Toa Sensuiki Co. Ltd., Japan



U.S. Navy Mark V



Desco, Milwaukee



Desco, Milwaukee

Evolution Of The Hardhat

By E.R. Cross

The modern sport diver often believes the heavy metal dive helmet is a thing of the past. Such is not the case. Probably more commercial diving is done today with these "heavy, cumbersome, difficult to use" outfits than with any other type equipment. Some helmets have, of course, become extinct, particularly those once used for sport diving.

One SDM reader wrote, "Recently, I re-read Truk Lagoon, Tomb of the Imperial Fleet, by Paul Tzimoulis. My interest in this SDM issue (March, 1971) stems from the fact that I recently acquired an old dive helmet strikingly similar to the one pictured in this article."

The helmet recovered by Paul Tzimoulis from the wreck of a Japanese WW II ship sunk in Truk Lagoon is Japanese. The article stated it was manufactured by the Sensui Co., Ltd., of Tokyo. However, I believe the correct name of the manufacturer is Toa Sensuiki Co., Ltd. The salvaged helmet dates from about 1935; but Sensuiki manufactured helmets prior to that time and, as far as I know, still makes helmet equipment. The helmet is almost identical to the Siebe-Gorman 12 bolt helmet in use for many years.

Helmet diving dates back nearly five and one-half centuries. But, without a source of compressed air, little could be done with such gear. Only in the past 75 or so years has the modern helmet come into its own.

The first mention in ancient writings about breathing underwater was by Aristotle who, in 360 B.C. wrote ". . . they contrive a means of respiration for divers, by means of a container sent down to them." For centuries the word helmet meant almost any covering for the head, usually of leather and certainly not resembling the modern metal helmet. However, one such device was developed in 1405 by Kyeser whose equipment was described as a "leather jacket, surmounted by a metal helmet with two glass windows."

Helmets appeared in illustrations of articles published during the next four centuries. Vallo (1524), Borelli (1680), Freminet (1772) and James (1825) developed dive gear with helmets of sorts. However, Siebe's "open diving dress" equipment developed in 1819 is considered the forerunner of the modern dive helmet. The design of his "closed dress" apparatus developed in 1837 remains relatively unchanged.

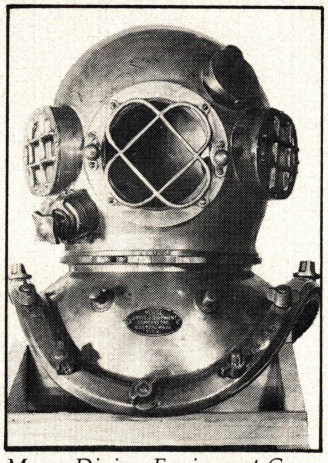
Siebe's first helmet was attached permanently to a short "skirt" that terminated just below the waist. Air entered the helmet through a valved fitting and was exhausted around the bottom of the skirt. Obviously the diver had to remain nearly upright or the unit would fill with water. Because this rig resembled a woman's dress, it soon became known as a commercial "diver's dress."

Siebe's, as well as today's, outfits are not permanently attached to the "dress" but are bolted to a stiff rubber collar by means of a breast plate with brass straps.

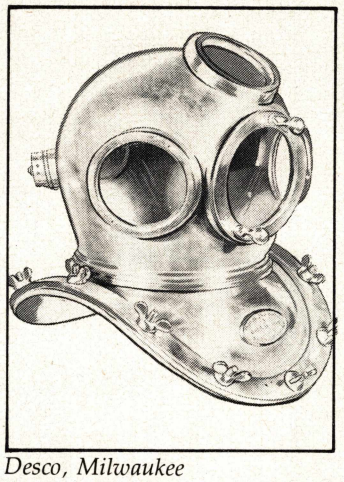
From the days of Siebe's early open dress equipment, helmets were made of metal, usually copper. There was at least one notable exception. This was Campbell's glass helmet of 1835, somewhat resembling modern plastic dive helmets. Early helmets were small and gave the diver almost no room to turn his head. Later, around the turn of the century, both the British and United States military dive helmets became much larger and much heavier. German, Italian, and Japanese designed helmets were smaller and lighter.

For many years England's Siebe-Gorman Co. dominated the world market for all types of dive equipment. A great deal of their gear is still found in many parts of the world. The Heinke helmet was also manufactured in England. In Germany, Draegeworks produced the well known Draeger dive helmets and related equipment as well as one atmosphere units and recompression chambers. In Italy, the Galliazi and, in France, the Denayrouse helmet were standard. In Japan, Toa Sensuiki Company, Ltd., and Yokohama Diving Equipment Co., plus at least one other company, manufactured dive equipment that found its way throughout the world. These were primarily used by Japanese divers working the pearl beds on a worldwide basis. Morse Diving Equipment Company in the United States was an early leader in the field. Later Schraeder (now owned by Craftsweld Equipment Co.) and Diving Equipment and Supply Company (Desco) entered the field.

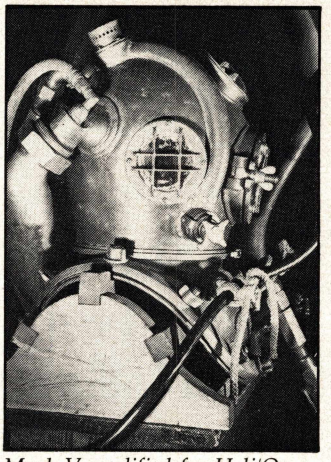
The trend away from large, heavy helmets was started in the early 1920's by the Japanese pearl divers in the South Pacific. This trend continued when the abalone divers of California and Mexico discovered the smaller, lighter, Japanese designed and manufactured helmets. Since they displaced less water, less weight was needed to sink them and the div-



Morse Diving Equipment Co.



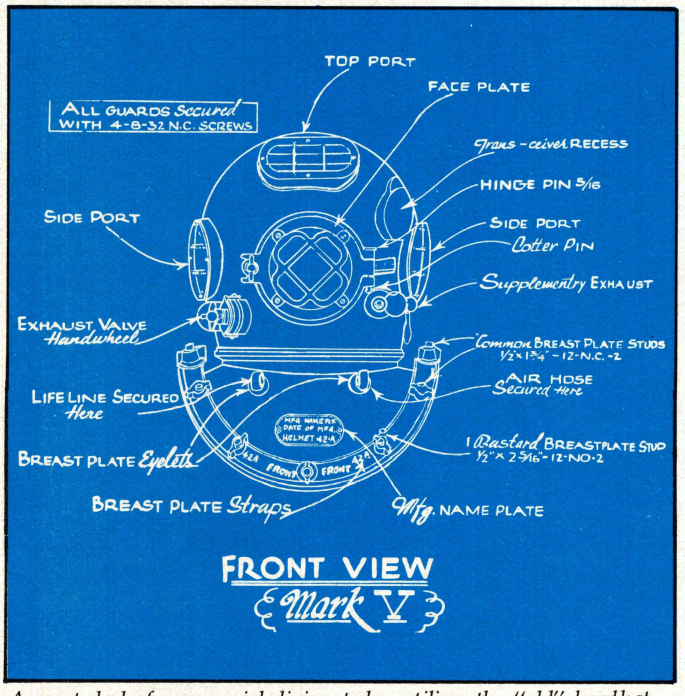
Desco, Milwaukee



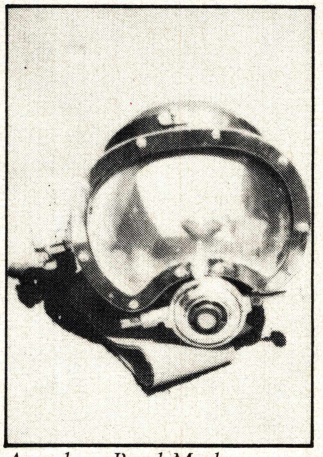
Mark V modified for Heli/Ox



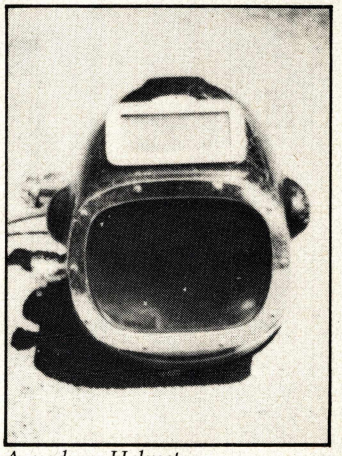
Morse Diving Equipment Co.



A great deal of commercial diving today utilizes the "old" hardhat.



Aquadyne Band Mask



Aquadyne Helmet

er's rig became lighter and easier to handle both above and below the ocean's surface.

Still searching for lighter and more maneuverable gear for their work, Southern California's ab divers began using facemask equipment with surface air supply. The first full facemask I ever dived with was the old Victor Berge mask manufactured by the Ohio Rubber Company. This was in or about 1939 in the Philippines. A later model featured a demand regulator which made it possible to go deeper with the limited surface air supply. Then came the Desco full facemask, probably during WW II.

Still not happy with available designs, divers began to design their own masks that permitted the use of conventional wetsuits and had nearly complete mobility. With further on-the-job modifications, the present-day breed of masks evolved. First, I believe, was the Widolf mask developed specifically for the ab divers but later adapted to other uses. Then came the Kirby-Morgan, the C-View, the Aquadyne, and the Swindell.

Most of the modern masks had large rigid frames and head harnesses, so large in fact, that they resembled small helmets. And it wasn't too long before mask-types were being modified into true helmets — small in size and, most importantly, for use with wetsuits. Some of these helmets were made of metal, usually anodized aluminum, but today most are made of synthetics such as fiberglass or plastic. At least one early helmet of this type was modified from a motorcycle crash helmet. These helmets have no breast plate but fasten to the diver's suit by a special neck ring. While the Kirby-Morgan helmet was not the first of the new lightweight helmets, it is the one that is truly a modified mask which gives rigid protection to the head and neck.

Possibly the first of the lightweight helmets was the Savoie. Then came Ratcliffe's Rat Hat, the Swindell, the Clark, the Aquadyne, the Desco, the Kirby-Morgan, and others, not necessarily in that order. Some of these, the Swindell and the Aquadyne at least, can be modified for use with self-contained, mixed gas systems.

Open helmets used without diving dress of any kind have been used for centuries. The U.S. Navy designated these as shallow water dive helmets. One was made for the Navy at least as early at 1920 by Miller-Dunn Co. Morse Diving Equipment Co., Schraeder and Desco manufactured similar helmets except for the Morse which had a curved, full-view faceplate.

Then, of course, there are the hundreds of "shallow water" helmets that have been made in the past hundred years or so by amateur divers from scrap lumber, tin, hot water heaters, and, in later years, plastic containers of all types. William Beebe, in his charming book, *Beneath Tropic Seas* (Putnam, 1928) said, "Don't die without having borrowed, stolen, purchased, or made a helmet of sorts, to glimpse for yourself this new world."

Scuba has replaced the shallow water helmet for the sport diver except for those few who want the totally different thrill of seeing the underwater world through the glass ports of a helmet, particularly one that you have made yourself.

NEW ENGLAND'S CAPE ANN AND NORTH SHORE

Rugged coastlines. Historical villages and towns. Fishermen, lobstermen. These are a few of the images conjured up by the words "New England." In the last few years, however, a growing number of people have come to associate clear water and good diving with this same geographic locale. This usually means people have discovered diving on Cape Ann and the North Shore.

Traveling north from the metropolitan area of Boston, one passes the old towns and historic harbors of Salem, Marblehead, and Manchester. They comprise a large portion of the area referred to as the North Shore. Following the coast again, in a northerly direction, leads to a peninsula which juts out boldly into the Gulf of Maine. These are the granite bedrock shores of Cape Ann. Rockport and Gloucester are the major towns on the Massachusetts cape and each has its distinct heritage.

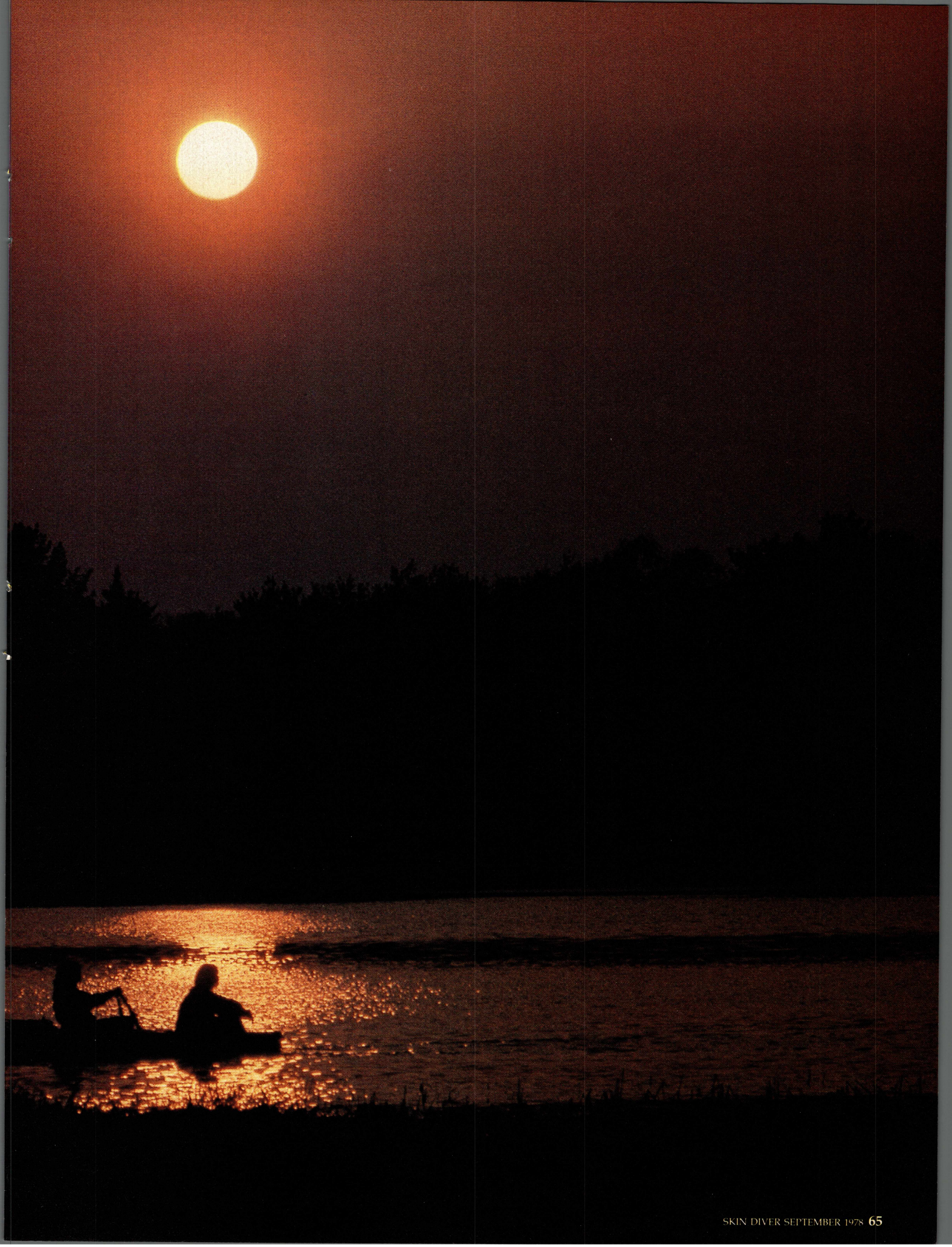
Historically, Rockport took advantage of the large amounts of granite in its natural environment. Quarrying it was the staple of the town's early economy. Years after the last substantial amounts







TEXT AND PHOTOGRAPHY BY BILL GLEASON AND FRANK FENNELL





of granite were mined, it is the granite bedrock that is luring divers into the area. Ledges, drop-offs, and loose boulders comprise the major topographical features of the underwater world of Cape Ann.

Northeast reefs are fragile ecosystems, and while their cousin coral reefs often overwhelm with their obvious beauty, northeast reefs offer fascinating rewards to the curious and patient diver. Ledges, small caves, and dramatic overhangs all provide interesting surprises in the form of anemones, sponges, crabs and lobsters. Kelp drapes most of these in the shallower depths, giving way to sparser levels of vegetation as a diver descends past the 50 foot level. At depth in the northeast an eerie mood prevails; visibility below the 45 foot thermocline often exceeds 40 feet.

Gloucester, not possessing such copious amounts of granite, turned naturally to the sea. Gloucestermen have been plying the fishing and lobstering trade since the early days of colonial America. They often combat inclement weather, cold water, and fog to reap their harvests from the plankton-rich waters of Cape Ann and the North Shore. Divers, well insulated to the cold water, often see schools of pollack and cod as well as ever present cunner and late summer tautog. Cape Ann also has some rather unique species indigenous to colder waters, such as the ocean pout.

Other seldom encountered species include sea ravens: with multi-appendaged bodies varying in color from red to golden yellow. Particularly at depths greater than 50 feet on sandy bottoms, the anglerfish lies superbly camouflaged.

The dive sites are as unique and varied as the area and its people. The more adventurous divers can easily find a number of beach entries that will thoroughly satisfy their desires for clear water, large fish and beautiful reef formations. Most shore entries can be spotted adjacent to Route 127 which winds its way through picturesque towns and along the majestic coast of Cape Ann.

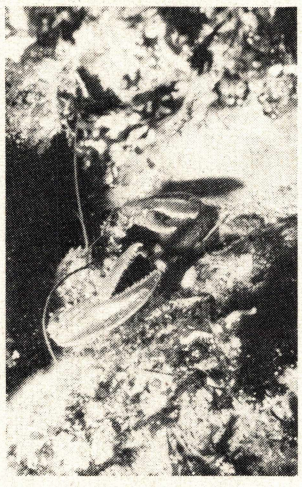
Parking is limited or restricted along the road. This usually means a quarter mile walk to the dive site, then a short hike over rocks or down a path leading to the water. However, the extra effort is not in vain. This is realized almost immediately as flowing kelp and delicate anemones appear and water visibility increases as you descend in one of many protected coves. Only a few of the more popular ones follow:

Folley's Cove — This is a classic introduction to Cape Ann beach diving located directly off Route 127, north of Rockport. During summer months the parking is restricted. There are two distinctly different dives here. The west or left side of the cove finds a wall about 25 feet deep. Along this wall is a soft blend of white, orange and red anemones hosting mysterious little rock eels. Following this wall toward the point for about 250 yards leads to deeper water and schooling fish. Striped bass and tautog in the 10 to 15 pound range are common as are three to five pound lobsters.

Diving the east side of the cove is a gradual descent over a boulder strewn bottom. Weaving your way in and out, over and around these large stones, your eye is caught by the red and green kelp in constant motion.

Cathedral Rock — Located directly behind the Ralph Waldo Emerson Inn on Route 127 just north of Rockport Harbor, Cathedral Rock is a wide area that rolls along the coast providing many different dives depending on direction, depth and distance offshore. There is limited parking available directly above the descent a diver must make down a gradual solid





Known for her colorful fishermen and lobstermen, Massachusetts' historic Cape Ann is also a favorite area for New England divers. Located just north of metropolitan Boston, Cape Ann features granite drop-offs, dramatic overhangs, kelp, lobster, and other interesting marine creatures.

rocky surface to the water's edge. The declining bottom continues underwater. You pass a series of sloping granite terraces, leading to a sandy bottom 75 feet deep. These terraces are covered with dark red moss and brown kelp, providing a blanket for colonies of mussels, clams and other mollusks. Along the way, your presence will most likely stir the flounders, which have camouflaged themselves on this ideal bottom. Between the terraces are holes large enough for divers to climb into in search of the more shy marine residents in the area, such as the sculpin. Larger fish inhabit the sandy bottom from which an occasional kelp covered wall rises.

Other beach diving sights on Cape Ann with unique bottom configurations, as well as a variety of kelp and other marine life, include Loblolly, Plum, and Pigeon Coves.

Boat diving is a more convenient method of diving. Until recently, this meant finding a lobsterman or fisherman who was willing to charter his boat for a day, bargaining with him, and then loading all your equipment onto an already overcrowded boat for a slow, choppy ride to your destination. However, Cape Ann Scuba Charters, in Danvers, is now providing a much needed professional service for individual divers as well as groups. Proprietors Bill Creese and Bill Corliss have outfitted a 25 foot Nova craft and two 20 foot Grady Whites to accommodate a total of 20 divers. One or two tank dives are available both morning and afternoon, as well as an early bird special that leaves the dock at 6:30 am. Tanks and backpacks are provided.

Rockport Breakwater — One and one-half miles east of Rockport Harbor is the unfinished Rockport breakwater. There are at least four different dives that can be made here. The protected side of the breakwater descends rapidly to 60 feet. Giant boulders are stacked uniformly, one on top of another, providing the base for the breakwater. Lobster traps dot the bottom in visibility that can reach 40 feet. Following the bottom northward, the breakwater curves westward and reaches a depth of 80 feet.

The seaward side of the breakwater is slightly rougher, with a moderately strong tidal surge. The boulders here have been dislodged slightly from the constant battering of the sea thus forming crevices, holes, and formations large enough for fish and divers to swim into. Poking around in these with a good light will reveal a rainbow of various colored sponges and anemones as well as some large and unusual fish.

Moving south along the bottom, the large boulders lead into granite ledges that gradually slope off to 80 foot depths and more pelagic species of fish.

Dry Salvages — Approximately one mile east of the Rockport breakwater is a granite outcropping known as the Dry Salvages. Here visibility is often in the 40 to 50 foot range and is a mecca for schooling fish such as pollack, cod, and striped bass. The area is particularly rich in large kelp beds.

Halfway Rock — This dive must be considered one of the best in the area. It is directly off Marblehead and right in the middle of Massachusetts Bay, a short hop from numerous other dive locations. On the lee side the subterranean formations are among the most varied in the area. Flat shelves give way to a drop-off that descends to 110 feet. Gliding along this sponge covered wall is truly invigorating as it gently curves back and forth and is broken by several cuts that allow a diver to pass through with schools of pollack following.

Cat Island — This is one of the first islands sighted just outside of the Marblehead Harbor. A diver can swim along a shelf 20 feet deep and then descend straight down vertical cuts to maximum depths of 35 to 40 feet.

Great Egg Rock — Slightly north of Manchester Bay, Great Egg Rock offers the dramatic effect of a sheer wall that descends to 70 feet.

Wreck of the *New Hampshire* — Built in 1810, and sister ship to the square-rigged *Constitution (Old Ironsides)*, the *New Hampshire* now lies in 30 feet of water just outside Manchester Bay. It was almost totally buried in the sand until the devastating blizzard of this past winter exposed six to ten feet of ribs. Large green and brown kelp grows over the structure and brass spikes, reportedly traced to Paul Revere's foundry in Boston, are exposed.

The water temperature ranges from a chilly 47 degrees in early May to 68 degrees in late August. Many divers bring along a hood, chicken vest and cold water mitts.

Spearing striped bass is not legal, and the taking of lobsters is restricted to license-bearing Massachusetts residents. These laws must be respected — they are rigidly enforced. The personnel in the local dive shops are knowledgeable and courteous, so don't be afraid to ask their advice on local laws or hints on where to dive.

NEW ENGLAND DIVER'S DIRECTORY

New England Divers, Inc.
Tozer Road
Beverly, MA 01915
(617) 922-6951
Rt. 128 N. Exit 19

North East Scuba, Inc.
125 Liberty St.
Danvers, MA 01923
(617) 774-7296
Rt. 128 N. Exit 23S

Cape Ann Scuba Charters
Pope's Landing (Port Marine Center)
10 Harbor Street
Danvers, MA 01923
(617) 777-3188
Rt. 128 N. Exit 23S

Got a Weight Problem?

then try a special system

By Bill Tubbs

"Your weightbelt is a major safety device." Throughout my basic course that phrase must have been mentioned by our instructor at least 100 times. And it's true. So, I dutifully practiced putting it on (last of course) and dropping it.

But, it wasn't until we made our first free dive that it dawned on me: You can't get underwater very well without some additional weight, especially if you are wearing a full, one-quarter inch wetsuit. Then I completely understood why weights are needed, and why they are a safety device.

For decades, divers had very little choice between types of belts: They were either rubber or nylon and they had quick release buckles. Lead weights, too, had few variations: There were cylinders, hip weights, and block weights. Life was pretty simple then.

The introduction of back flotation units to the buoyancy compensator market changed all that. Now we have "weight systems." You have your choice of putting the weight on your back or around your middle. These systems were developed to try to solve some of the problems associated with the old weightbelt. In some cases these designs were successful and in others they weren't. At present there is an amazing array of choices to be made as you select a means of getting underwater and staying there. The following list will give you a general idea of what is available:

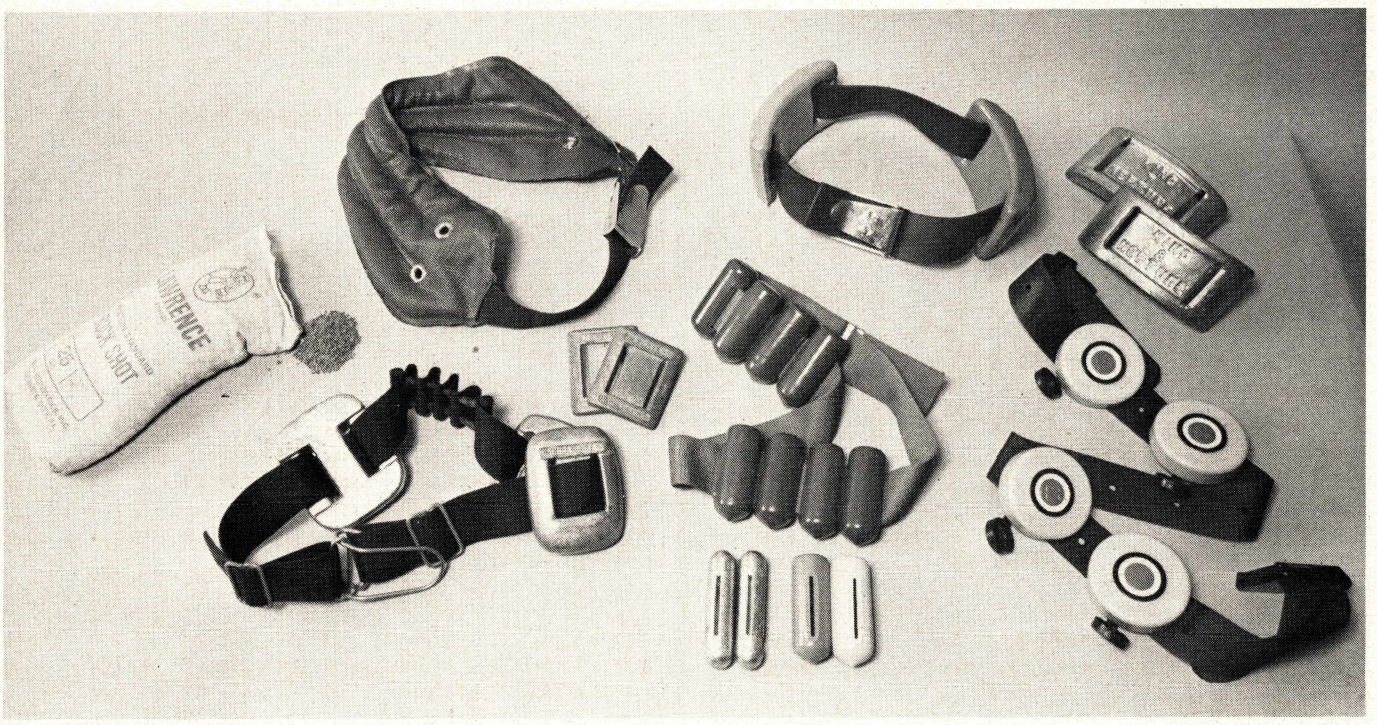
Belts — nylon webbing, nylon webbing with expandable inset, rubber, and vinyl rubber shot belt.

Weights — cylinders — usually 1 to 1½ pounds, bullet — uncoated and plastic covered, BB shot, ball shot, block weights — slotted and unslotted in various sizes, and hip weights — also in various sizes.

Buckles — wire frame quick release and standard quick release.

Weights for back mounted BC's — block weights, disc weights, ball shot with marbles.

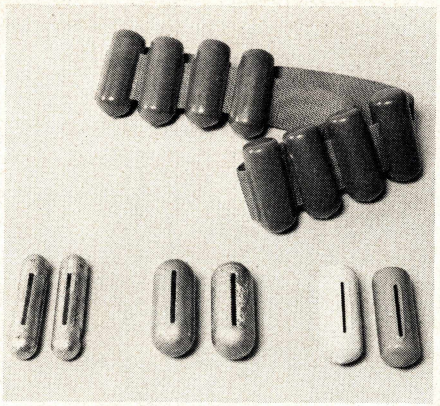
In order to understand how these various weight systems came into being, and what they are meant to do, we should first take a look at the basic weightbelt. This weightbelt, as I define it, consists of a webbed belt with a solid buckle and holds cylinder weights. Let's look at the component parts.



The various weight systems in use today include buckshot and marbles, BB shot, cylinder, block, disc, hip and vinyl covered weights. The weights pictured here were furnished by three Los Angeles area dive shops: New England Divers, Scuba Duba Dive, and Scuba Haus.

When the belt is first put on, it fits fine, but once underwater it starts to loosen as the wetsuit compresses. This means that at some point the belt has to be readjusted or else it will slip around and can fall off. Contracting belts were devised to solve this problem. Divers made their own from rubber strips or bought a nylon webbed belt with a rubber strip running through several "gathers" on the belt. The belt is stretched and put on on the surface, the tension is maintained and the belt contracts as the wetsuit compresses underwater.

The solid quick release buckle is the same as the tank waist strap buckle.



One pound cylinder or bullet weights allow the diver to make adjustments more easily.

They could be confused. Divers worked out various methods for overcoming this confusion such as having the buckles release in different directions. This worked fine until someone forgot which was which and dropped the weightbelt while trying to adjust the tank. Thus the wire frame buckle was designed. It is different from the standard quick release buckle and so is easily recognized by touch. However, the wire buckle only works well with a contracting weightbelt. You cannot take up the slack produced by compression with the wire buckle.

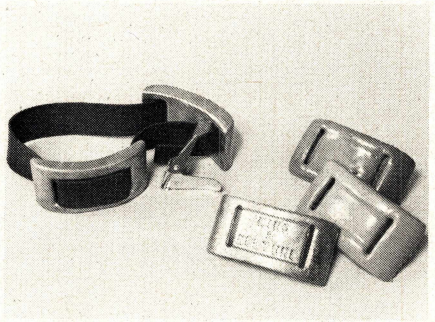
Cylinder weights work fine. They are fairly easy to put on and to adjust. However, if you need more than 20 pounds, the cylinders can get caught under the tank backpack restricting a free release. Also with more than about 20 pounds, it becomes more difficult to don the weightbelt as there is a tendency for the weights to twist. For easier donning and adjusting, block weights are used. It is easier to handle four 5 pound weights than it is to handle 20 one pound weights. Sport divers then took a look at the weights used by the hard hat divers and started using hip weights. These are weights contoured to fit around the hip area. With these, a diver who needs 20 pounds can pick up two weights and step into the belt.

Some divers had discomfort with all of these solid weight concepts and so the shot belt came along. This is a vinyl belt which holds BB shot. It conforms to the shape of the diver without a lot of bulk. In addition, the shot belt eliminates the possibility of pinching which can occur with cylinder weights.

Despite all the competition, cylinders continued to be the big seller. But cylinders have sharp edges and can damage wetsuits, pool, boat decks and toes. Thus came weights covered with colored plastic. This added a little glamour to the sport and minimized damage to surrounding materials.

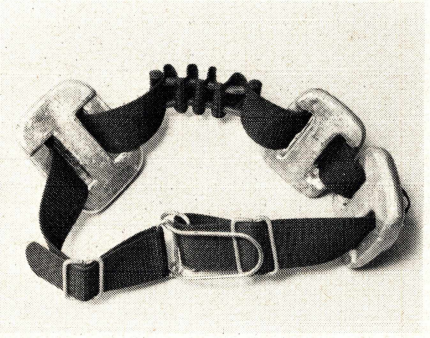
With the introduction of the At Pak came a major design change in handling weights. The At Pak incorporated weights into the tank backpack. This did away with two sets of straps around the waist and moved the weights higher on the torso. The original weights consisted of ball shot which was released by pulling a pin on the bottom of the tank pack.

The At Pak system had one drawback: The weights and release mechanism needed to be rinsed with fresh water to prevent salt build-up and congealing of the shot. When the Watergill folks discovered that divers were not rinsing their gear properly, they enlarged the weight cavity and added marbles. Since the marbles shift around as the unit is carried, the shot is prevented from congealing.



Contoured hip weights are comfortable for some divers and uncomfortable for others.

photography by Geri Murphy



A rubber expander is placed between block weights to provide free space for the tank.

Scubapro then added to the selection with tank weights. This unit attaches around the outside of the tank and holds two cylinders (one on each side of the tank) filled with disc weights. While these are normally used with back flotation BC's they can also be used with the horse collar. The unit is movable and can be adjusted to ride either high or low on a tank, for customized weight placement. Weights are dropped by pulling a ring on each of the cylinders which allows the weights to slip out. These weights also need to be rinsed off to eliminate salt build-up. This system appears to have one major drawback: Since the weights are away from the body, there is a problem with balance underwater. This is easily corrected, but it takes time to become accustomed to a new center of gravity.

Not too long ago, Dacor introduced the Nautilus, which provides space for four 4 pound block weights held in a cavity in the back of the unit. These weights are held in position by the tank at the side and by a metal bar at the bottom of the unit. Scubapro also has a hard shelled back flotation device which can carry up to 40 pounds of block weights — four 5 pound weights on each side. Since most divers will not need that much weight, there is a built-in adjustment to prevent the weights from slipping around. These weights are released by pulling two straps (one on each side) and raising the weight cover.



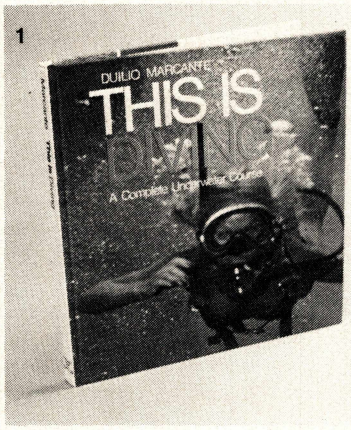
Some divers prefer the comfort of the shot belt even though it is difficult to adjust.

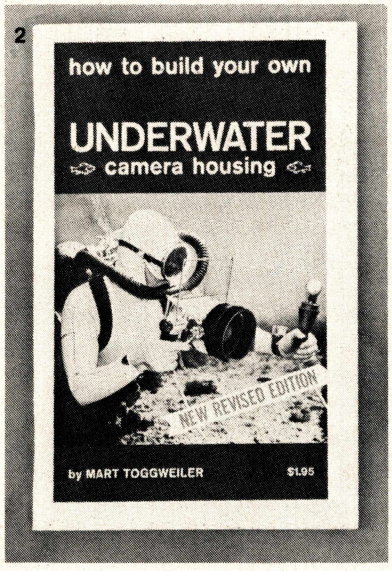
Which weight system you select depends upon what you feel comfortable with. When you consider your selection, here are a few things to remember: No weightbelt will fall free if you are 30 degrees from vertical; you will have to pull it off. This is also true of most of the weight systems. The Scubapro unit with weights in the sides of a hard shell will not fall free if you are on your back. The Nautilus weights will not fall if you have a boot on your tank. And a webbed weightbelt can jam if it is not trimmed. A webbed belt can also fold over and jam the buckle. A rubber weightbelt can split, causing the weights to fall off. Most of these problems can be overcome with occasional maintenance.

If you are a traveling diver, you are almost forced into using a weightbelt.

(Continued on Page 112)

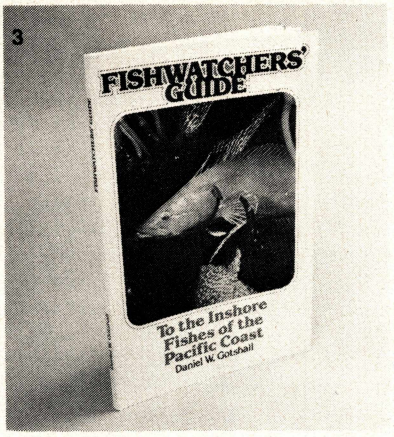
New Books

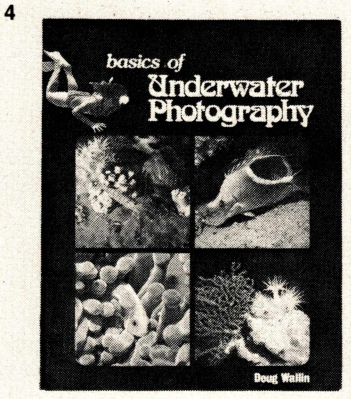


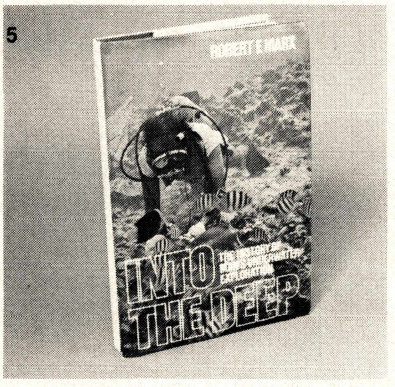


1 This is Diving — A colorfully illustrated dive manual originally written in Italian by Duilio Marcante. Editor of the English edition is Mike Busuttili. An excellent text for both beginning and experienced divers. $13.95 plus $1 postage. From Sail Books, Inc., 38 Commercial Wharf, Boston, MA 02110.

2 How to Build Your Own Underwater Camera Housing — A revised edition of Mart Toggweiler's comprehensive manual. It includes photos, drawings, and detailed instructions on how to make a sheet of Plexiglas into a functional and attractive housing. $1.95. From Hydrotech, Box 14444, Long Beach, CA 90814.



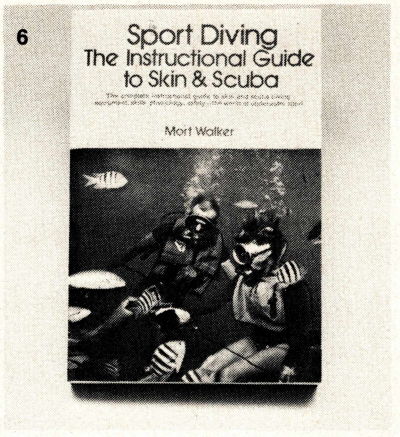


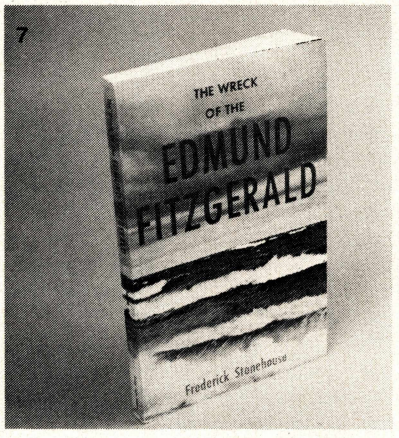


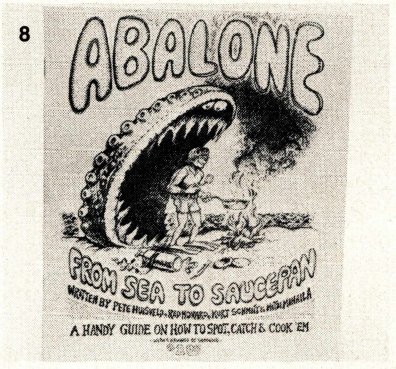
3 Fishwatcher's Guide to the Inshore Fishes of the Pacific Coast — A concise and accurate reference manual especially for sport divers. Simply written and illustrated with color photographs by Daniel Gotshall. $8.95. At your dive shop or from Aqua-Craft, 3280 Kurtz Street, San Diego, Calif. 92110.

4 Basics of Underwater Photography — A step-by-step, well-written and easy to understand guide to taking pictures underwater. Author/photographer Doug Wallin leads you through the complexities of U/W photography by using clear, easy-to-grasp concepts. $5.95. From Amphoto, Garden City, New York 11530.

5 Into the Deep: The History of Man's Underwater Exploration — A new book by noted author/diver/treasure salvor, Robert F. Marx. It traces diving from the ancient Greek sponge divers to our present-day scientific researchers. $9.95. From Van Norstrand Reinhold, 135 West 50th Street, New York, New York 10020.







6 Sport Diving: The Instructional Guide to Skin & Scuba — A complete, up-to-date text for beginning divers. Author Dr. Mort Walker covers all the basics and some advanced techniques. Illustrated with numerous photographs. Paperback, $6.95. Henry Regnery Co., 180 N. Michigan Avenue, Chicago, Illinois 60601.

7 The Wreck of the Edmund Fitzgerald- A fascinating account, by diver/historian Frederick Stonehouse, of the events leading up to the ship's disappearance during a storm on Lake Superior. It includes photographs and details of the subsequent investigation. $5.50. From Avery Color Studios, AuTrain, MI 49806.

8 Abalone: From Sea to Saucepan — A handy guide on how to spot, catch and cook these delectable mollusks, by Huisveld, Howard, Schmitt and Mihaila. Written in a humorous, tongue-in-cheek style, it's fun to read and has some great recipes. $2.95. From Aqua-Craft, 3280 Kurtz St., San Diego, CA 92100.

fishbowl furnishings

BY MARK DULIN DVM



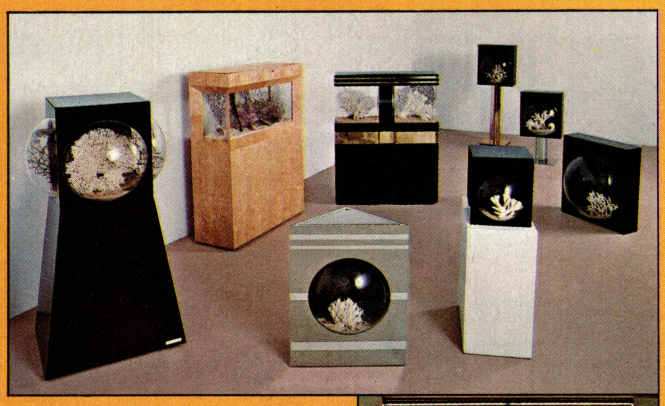
If you are interested in fish, you may want to consider setting up an aquarium in your home. Not only can you derive a great deal of pleasure from keeping beautiful exotic fish, but these fish, and the aquarium, can often add that something extra to an otherwise sterile atmosphere.

You'll need to read up on the subject of setting up a home aquarium and caring for tropical fish, but this information comes easily. It is selecting the proper aquarium cabinet and placing it in the right surroundings that offers the real challenge. All too often the beginning aquarist ends up with some atrocious monstrosity that appears obsolutely ostentatious.

With a little help, you can select an aquarium that fits into your decor and doesn't stand out like a crow in a brass bird cage. All you really need to do is think of the aquarium as being a piece of furniture and place it in proper perspective with your other furnishings and accessories. A little planning goes a long way in helping you select a sophisticated, off-beat aquarium that could be considered as a work of art.

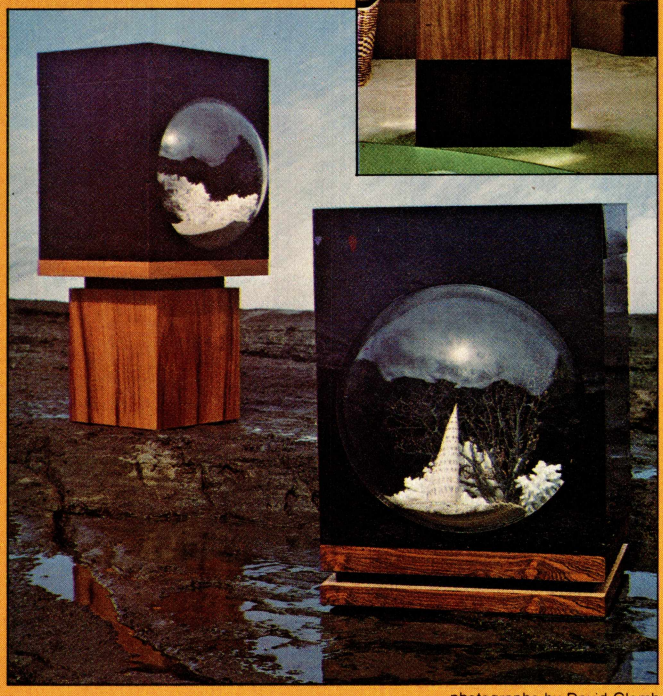
Just as your clothes, jewelry, hairstyle, pets and car reflect your personality, so too does your apartment and its furnishings. What you do with your apartment says a lot about you, and can give visitors a feeling of ease, warmth and welcome or make them tense and uncomfortable. Of course, you don't want to design your home to suit the neighbors; it's what gives you the greatest pleasure that counts. Who can be a greater expert in the things you like than you?

Before purchasing a decorative aquarium, first plan a working furniture arrangement — don't go out and buy a huge tank and then try to fit it in with your decor. The time to plan for the piece is before you buy it. Consider the elements of size, shape, scale, balance and color. Among aquarists, scale is the element most neglected. Scale is the





The custom aquariums shown here were designed by John Deason of Captive Sea of Hawaii. Author Mark Dulin is a New York based veterinarian who specializes in fish health.



photographs by David Glomb

proportion of one object in relation to its surroundings. A 55 gallon aquarium is generally not properly suited for a working person's studio apartment.

The shape of your aquarium cabinet is important, too. Go ahead and buy or make a cabinet in the shape of a treasure chest if you are striving for the nautical look. But, if you plan to place it next to Aunt Lola's Chippendale buffet, don't be surprised if your friends are not impressed by your ability to deal with interior design.

Color is also an extremely important consideration when buying an aquarium and purchasing accessories for the tank. Some people even go so far as to worry whether the color of the fish blend harmoniously with their decor. The woodgrain look is fine if you want to achieve the informal or country look, but it is out of place for formal rooms. Colors are very important in creating a mood. If the focus is on the aquarium, neutral or cool tranquil colors may be the best bet for the cabinet and walls around the aquarium. On the other hand, if the room gives you that run-down dingy feeling, sprucing it up with sunshine colors of red, yellow and orange may give you the excitement you need.

Let's assume you have established some type of decorating goal and want the aquarium to be the focal point for the room in question. You know whether you want the country look, the nautical look, the offbeat funky look, or the sophisticated, opulent look. You have in mind a particular size, shape and color for the aquarium cabinet. Now build the furnishings around this magnetic point; sit down and sketch your proposed floor plan. All things must be considered, including natural and artificial lighting, electrical plug-in's and traffic patterns. Careful planning at this stage can save a lot of backache in the future — an established aquarium, full of water and stocked with fish is no easy thing to rearrange.

Certainly cost is a factor which must be considered before buying or constructing that cabinet you have planned. Regardless of whether you purchase a free-standing unit or incorporate an aquarium into the architecture of the room, an attractive unit should be considered as a financial investment. It costs money to do anything these days, but knowing how to spend money is often more important than how much you spend. Good buymanship is knowing what you want, where to find it and what to do with it. Now let's take a look at some specific rooms.

The living room is generally the largest room and the one with the largest share of the decorating budget. It is here that people generally get their first impression of your home.

The best advice for any room, living room included, is to avoid the cluttered look and think small. Incorporating the aquarium into a console often saves floor space and imparts a nice attractive look, especially in small rooms. Remember, however, that adequate ventilation is needed to prevent pumps from overheating and free access is needed to make adjustments, add fish and allow easy daily access for feeding and maintenance. Another thing to consider is the corrosive effect of marine aquariums. I don't care how tight the seal; in the course of feeding, monitoring water chemistries, rearranging coral, etc., some saline mist escapes and this can have an adverse effect upon stereo and TV components.

Another thing to consider when decorating your living room is how long you intend to remain on these premises. If your lease expires in three months you may not want to invest in major architectural changes — such as knocking a hole in the wall to accommodate a recessed aquarium.

More-and-more, the master bedroom is becoming a relaxing and comfortable area. A nice sound system, plants and an ornate aquarium can do wonders to enhance the value of that all-important room.

Aquariums have also been successfully used as decoration in other rooms, such as the bathroom. If you are the type of person who likes a luxurious bath, perhaps a bathroom aquarium would be a good investment. Is there a more natural place in your home to enjoy aquatic creatures than from the depths of your sunken tub?

Aquariums are a functional and enjoyable way to decorate your home — you can even use the tall exhibition tanks as a room divider. The main thing to remember when deciding on an aquarium is that no one can be a greater expert about the things you like than you. Through questions and observations, a good interior decorator will come to some conclusions regarding your personality and life style, then will make specific recommendations. You can take an introspective look at your personality and life style by yourself, then decide upon your needs and desires so that you can set up your aquarium in an esthetically pleasing manner. Not only will you save the cost of hiring a professional interior decorator, but you will also gain the intense personal satisfaction of having done it yourself.

New Gear



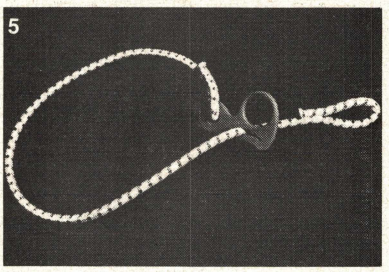


1 Sea Skin — Provides light thermal and abrasion protection for tropical diving. Designed with style and comfort in mind, the suit is made of stretch nylon and comes in red or navy. Available in men's and women's sizes, S, M, L, and XL. $34.95. From R. N. Tice Co., 620 N.W. 19th St., Ft. Lauderdale, FL 33311.

2 Wet Notes — A new waterproof notebook for outdoor people, it has tough waterproof paper, a handsome vinyl cover, pencil, and three year calendar. It measures 4¼" x 7½" and is convenient for both topside and underwater use. $4.95. From E. S. Ritchie & Sons, Inc., Oak Street, Pembroke, Mass. 02359.







3 Bluefin Stabilizing Vest — Gives all-around buoyancy control with total diving freedom. It comes complete with push button inflator, cam backpack, CO_2 detonator, utility pocket, single strap adjustment, double bag construction and Tuff Tiger threads on the outside. $230. From Seatec, P.O. Box 1109, Orange, Calif.

4 Ultimate Travel Pack — Ideal for traveling divers, the sturdy little gear bag doubles as a suitcase and fits under airline seats. Constructed of 11 ounce waterproof Cordura nylon, the pack is strong and lightweight. About $50. From West Ridge Mfg.-Dolt, 11920 W. Olympic Boulevard, Los Angeles, CA 90064.

5 Super Cinch-It — An adjustable tie-down cord with a quick-fasten design, it has a three-inch to six-foot capacity. With a heavy duty shock cord and a unique deep-notched, nylon tooth fastener, the device has a wide variety of uses. $1.99. From I.S.I. Manufacturing Co., 3116 Monticello, Dallas TX 75205.

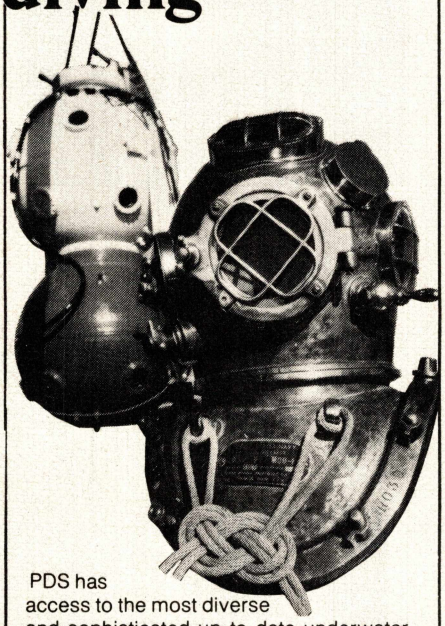




6 Vinyl Brite — Penetrates vinyl and rubber surfaces, providing protection against oxidation, salt water and normal wear and tear. Revitalizes dried and faded surfaces. Available with handy pump spray applicator. $3.25, 8 ounce size; $6, 16 ounce size. From drug and department, auto and marine stores.

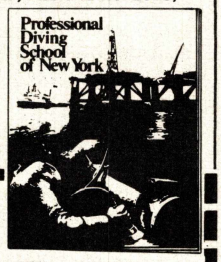
7 Foam Thermos Bottle — Insulated with polyurethane foam, this new wide-mouthed thermos is lightweight, unbreakable, rust-proof and dent-proof, Comes with non-jamming cup cap and mug style handle. Pint size, $2.89; quart size $3.69. From Aladdin Industries, P.O. Box 7235, Nashville, Tennessee 37210.

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FLORIDA LOBSTERS OVERFISHED

The Florida lobster, a favorite seafood of residents and visitors alike, is becoming hard to find. This highly valued coastal marine resource has been intensively exploited for many years by commercial trap fishermen and recreational divers. Now the Florida fishery is exhibiting alarming signs of overfishing — small catches of small lobsters despite greatly increased effort.

The compelling need for resource management in the lobster fishery has been recognized by the Florida Department of Natural Resources. With a recent grant from the Ford Foundation, specialists from the University of Miami's Rosenstiel School of Marine and Atmospheric Science and the University of Florida's Department of Food and Resource Economics will be able to combine forces with the state agency to formulate good management policies aimed at protecting the stock while helping the fishermen keep lobster on the menu.

Dr. Bruce Austin of the Rosenstiel School, whose field is the economics of fisheries, will head the program and coordinate the efforts of biologists, economists, lawyers, and policy makers as they focus on *Panulirus argus*, the spiny lobster.

Analog computers will be put to work to develop a dynamic numerical model or simulation of the lobster fishery. The effects of bio-economic conditions can then be judged by changing inputs to the model. The output of the simulations will be translated to guidelines for fishing effort levels, landings and yield, length of the commercial and sport fishing season, and costs and returns for the commercial fleet. The goal of the program is effective regulation that is fair to all.

The Ford Foundation provides grants for projects aimed at encouraging universities and state governments to work together to improve overall management of the environment. This project was one of 19 selected from more than 200 submitted to the Foundation in a national competition.

SELPAC IS DISTRIBUTOR OF THE YEAR

Selpac Corporation of Costa Mesa, California, has been named distributor of the year in scuba sales for 1977 by Sherwood Selpac Corp., Lockport, New York. The Sherwood scuba line includes regulators, valves and cylinders.

Selpac president, Robert Bludeau, accepted the award plaque for the distributorship from Orin Lindquist, president of Sherwood Selpac, at the recent LP Gas Show in Houston, Texas. His company represents Sherwood LP gas fittings, compressed gas fittings and scuba products in Arizona, Alaska, Cali-

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AQUA SPACE '78

Aquatic Exploration and Research Associates (AERA), a non-profit organization, will be celebrating its second anniversary with its second annual festival, to be held in Windsor, Ontario, November 4th and 5th. The group has produced a bi-monthly newsletter, AERA Log, in which its activities and planned projects are recorded. AERA formed an Aquatic Sciences Institute in which it arranged courses in underwater archaeology and underwater film making. Individual members have taken courses in coastal geography, underwater photography, boating, piloting and meteorology.

This year AERA helped form the Windsor Chapter of the Ontario Archaeological Society. It also joined the Kent Dive Club for a weekend workshop on commercial diving. Recently AERA concluded a successful filmmaking workshop at Tobermory, Ontario under the direction of the award winning professional filmmaker, John Stoneman of Mako Films. This led to a collaborative effort with Mako Films in which AERA was featured in a film made for TV. The film pertains to a project on the *Arabia*, a well preserved 19th century shipwreck. John Stoneman's film, *The Arabia Incident*, will have its world premiere at Aqua Space '78.

The Math Building at the University of Windsor, Windsor, Ontario, Canada, will be the location of the festival. Aqua Space '78 will also headline Jack McKenney, the well known filmmaker, who was so instrumental in the success of last year's festival and Dr. Joe MacInnis, the well known Canadian diver, famous for his many underwater research projects, films, books and TV series. The program will also include Robin Lehman's film *See*, plus many more exciting features. There will be contests in underwater photography, movies and research projects, with both amateur and professional categories. Mako films will be presenting a trophy for the best amateur Canadian film. The entry deadline is October 1, 1978. For more information about the festival and contests, contact Jocelyn Goodwin, 3147 California Ave., Windsor, Ontario, Canada N9E 3K5.



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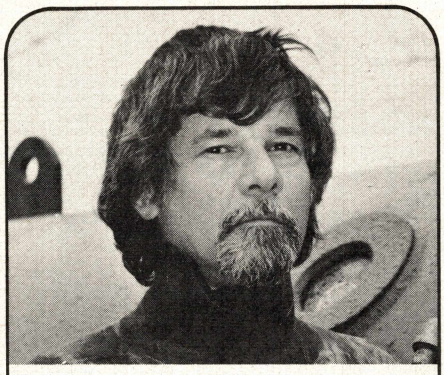
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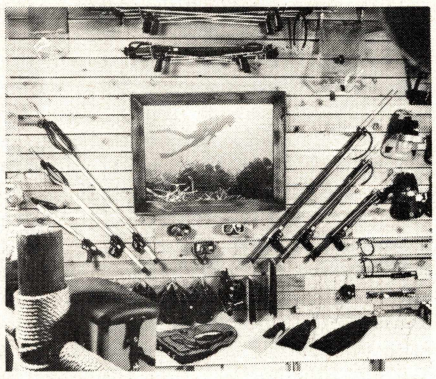
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BEYOND THE COLOR SLIDE

BY BURTON MCNEELY

There's more to your beautiful U/W photography than boxes of color slides. Thousands of photographers are are spending many thousands of dollars on expensive camera equipment and exotic trips to shoot millions of beautiful and colorful U/W slides. For most of them, this is where the process stops. After a few shows for friends and club members, the slides are retired to stacks of boxes. Some photographers have tried, with varying degrees of success, to get color prints made from their choice slides, but generally the results have been dismal. In general, few divers have realized the uses and pleasure they can get by displaying their work in their homes or places of business, or offering it for sale as prints or transparencies. In part, the reason for this has been the poor service received from many color labs over the years.



Modern labs rely on automated printing equipment and U/W slides, with their overall bluish cast, cause distorted and exaggerated readings. Operators, not familiar with the specifics of U/W photos, tend to over-correct the prints and the results have been generally poor. The resulting frustrations and horror stories have done much to discourage divers from enjoying their work past the slide stage.

There are now full professional custom lab services available to the serious U/W photographer. They offer the same professional quality and services to amateurs that have been offered top pros for several years. Staffed by skilled technicians who understand the special problems in U/W photography, the labs offer custom services for a variety of uses. These include dupe slides, enlarged dupe transparencies, custom internegatives and exhibition quality color prints. This opens up several possibilities for the U/W photographer.

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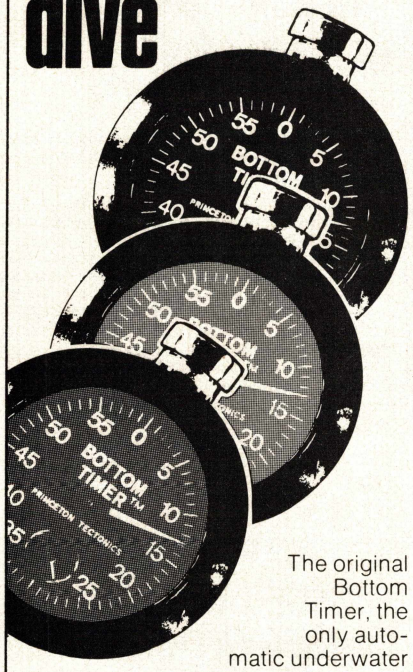
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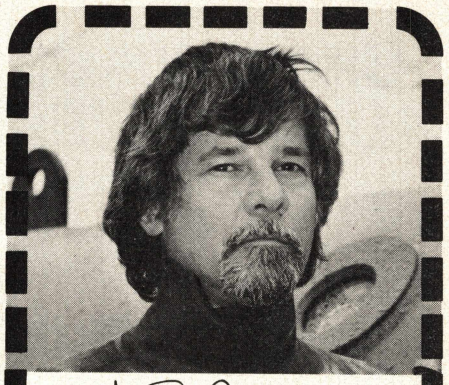
What are some of the ways to utilize your best work and how can you reap benefits from your prized slides? First, the most obvious and popular idea is to use enlarged color prints in decorating home and office. Photographs are becoming an increasingly popular art form and are being used as key elements in room settings, office decor and business interiors. Good U/W photos can be both specialized decor depicting ocean and water moods and good general art with striking colors and pleasing design. Used singularly or in groupings, U/W photos fit into seafood restaurants, dive shops, marine supply stores, professional offices, reception rooms and the home. Single large prints can be used as the central dominant element on a wall. Smaller prints, in various sizes, can be combined in a variety of groupings to fit any space or room. U/W subjects go well with rustic wood frames and the combined package is an attractive decorating element. Uses for color prints in decorating is limited only by the imagination of the individual photographer.



photographs by Burton McNeely

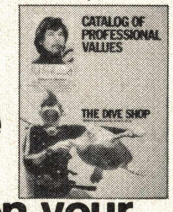
Another use for good color prints is U/W photo contests. There are now dozens of national and regional photo competitions throughout the year, and some of these offer attractive prizes. Having judged some of these contests over the years, I have seen how frustrating it has been for many serious photographers to get good quality color prints. Some do their own printing, but many depend on a lab. Many basically good photographs suffer because the prints are off-color, too contrasty, or are generally poor quality. There are a couple of reasons for this, one of which is the dependency of many labs on automated equipment that mis-reads the color balances of U/W slides. Another reason is that with slide film, a good internegative is necessary for accurate prints.

The average internegative from a volume lab is the weak link in the process. Most labs offer internegs made on roll film designed for camera use instead of internegative use and there is no contrast control available. It almost works and is cheap, costing usually $1.50 to $2 each, but it won't permit high quality prints to be made of any size. A good professional lab will make an enlarged



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4x5 internegative on film stock that is specifically designed for this use with self-masking properties built-in. It costs more because they are hand enlarged, but these negatives will make beautiful, accurate color prints up to mural size from good, sharp 35mm slides. The difference between prints made from the two kinds of stock is the difference between a prize winner and an also-ran.

With the availability of quality color prints from good original slides, another use for prints has developed in recent years. Weekend art and craft shows have been around for years, but recently good photo prints have enjoyed increasing acceptance as an art form. Many photographers who do beautiful mood seascapes and scenics have found these shows to be an excellent source of income from their photo work. The secret has been exhibition quality color prints in popular sizes (8x10, 11x14, 16x20) attractively matted and reasonably priced. They are offered framed and unframed, and in a variety of prints. of

One acquaintance of mine has now gone full time into this market. He does good work, has a simple but attractive display setup, maintains a good selection of his prints in all popular sizes and keeps his prices reasonable but profitable. There's no reason why U/W prints which have good composition, striking colors and design, or subtle moods would not sell to some kind of customer. A good photograph, whether made U/W or in the mountains, will appeal to a general audience.

All of the custom lab services mentioned here are now available to the serious U/W photographer through Scuba Chrome. An informative free color brochure is available by writing Bob Burkhard, Manager, Scuba Chrome, 4911 W. Grace St., Tampa, FL 33607.

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The North Atlantic Branch of NAUI is accepting applications now through December for its $1,000 Commercial Diver Scholarship. Sponsored by Undersea Systems of Bay Shore, New York, it will be awarded at NAUI's 1979 Underwater Symposium and Film Review in Boston.

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INNER TUBE SALVAGE

(Continued from Page 46)

igational lights, extended on aluminum poles and located on the bow, surfaced. This was soon followed by the roof of the houseboat's front veranda. Enough of the bow was now exposed to give the appearance of a perfect ski jump. At this point the divers moved to the stern where the motor and 45 gallons of fuel were located. This end was considerably heavier and called for far more flotation and exhausting work. The divers were up and down the descending lines too many times to count, hoping each trip would be their last. Finally, the boat became so light on the bottom that the divers pushed upward and the massive object took off for the surface with the help of Boyle's Law.

The bystanders and sidewalk superintendents clapped, the working trio gave a sigh of relief and a tow boat was summoned. However, all this joyous jubilation was premature. Suddenly a loud explosion was heard and two tubes blew out. Like a deflated ball, the stern sank back into the depths. The divers put on their gear again, grabbed several large tubes, a tank for inflating and went back to work. Time passed and once again the roof of the boat broke water.

Towing a two-thirds sunken houseboat is slow going, but can be done. It is far wiser to move the project to where it bottoms out than to attempt complete recovery in dark, deep water. Once in front of the loading ramp and now in 12 feet of water, tubes were rearranged and placed under the hull so the steel structure would ride higher. The entire objective was to raise the boat high enough in the water so it could be loaded onto a trailer from the ramp. The project did not call for flotation to a point where the boat was completely above the surface.

When the boat was in the proper position, a 40 foot long hauling trailer, attached to a heavy duty tow truck, proceeded down the ramp. The winch on the truck was lowered to the divers and they attached the hook to the boweye. With the force of Hercules, the hydraulic winch pulled the 14,000 pound houseboat onto the trailer. When the craft was sufficiently out of the water, bilge pumps were put into the hold and the hull was emptied of mud, debris and gallons of water.

With the boat sitting erect, above its watery grave, the once-useful inner tubes lay limp like lettuce on a hot summer's day. The project was over, the divers exhausted, and although the boat owner hoped the insurance company would declare the boat a total loss, it had been recovered — undamaged through safe, economical salvage procedures.

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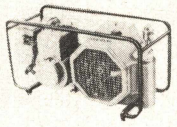
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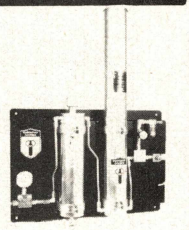
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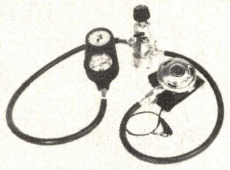
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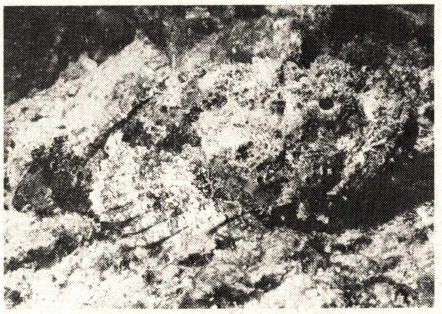
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MASTER OF DISGUISE

(Continued from Page 49)

erect forces the protective membrane from the bone-like spines that contain the venom. Fortunately for me, I grasped the fish with such a quick motion that the creature did not have time to extend its dorsal spines in defense. Thus, it was rendered relatively harmless, except for the near cardiac arrest it caused me when I realized that this was no ordinary handhold.



Not known for its long distance swimming abilities, the spotted scorpionfish is quite sedentary by nature and will often exhibit bulldog-like tenacity when prodded or challenged for position, refusing to budge or reluctantly swimming only far enough away to avoid further confrontation. Territorial and slow from point A to B, the fish is extremely quick, agile and efficient when seizing its food. Feeding on small fishes and an occasional crustacea, the scorpionfish has the ability to strike with a lightning quick forward snap of its jaws and return to its original resting position, all within one-half second.

Scorpaenidae are widely distributed throughout all tropical and temperate seas. For the most part, the species are shallow water bottom dwellers usually found in bays, along sandy beaches, rocky coastlines or coral reefs, from the intertidal zone to 50 fathoms or more for the larger of the species. Many of these larger classes of the fish are becoming well known as valuable food sources.

Extremely attentive and brilliantly colored when observed at close range, the scorpionfish's ability to adapt its coloring to that of its surroundings and its almost uncanny selection of resting places make it nearly impossible to detect and observe from any distance even by the trained eye. When feeding, the fish is normally found tucked between coral outcroppings, resting on the sand in between areas frequented by large quantities of the smaller reef fishes. Occasionally I have observed the creature perched in basket sponges eyeballing its surroundings menacingly from its pedestal and always matching its color to that of the sponges.

Beautiful in its uniqueness, dangerous in its sedentary defense, the scorpionfish is indeed one of the marvels of our underwater world.

SDM TRAVEL SECTION

WHERE TO GO/HOW TO GET THERE/WHAT TO DO

SUPER WALLS OF THE CARIBBEAN

By Al Hornsby

Effortlessly and slowly we fell steadily downward, in a smooth glide that carried us easily past the sheer cliff face disappearing into the deep blue before us. We moved past undulating fields of hydroids and seafans, their vertical orientation pleasantly confusing our senses, making us feel as though we were flying through some surrealistic dream world.

It was hard to believe that only 15 minutes before, we had been sitting at a comfortable breakfast in the Small Hope Bay Lodge, discussing the plan for our first dive on the famous wall of Andros, in the Bahamas. The lodge is only a five-minute boat ride from the drop-off, making it a greatly convenient base. Our hosts, Dick and Rosie Birch, had supplied us with a boat, plenty of air, and directions to some of the more interesting spots on the wall.

The drop-off begins in 70 to 80 feet of water. The top edge is covered with a healthy growth of coral and abounds with small reef fish and some of the tamest, most friendly groupers we had ever seen. There is no warning for the beginning of the Andros wall, only a sudden, vertical pitch that plummets downward to an incredible 6000 feet. It was here that Dick Birch first popularized wall diving in the early 1960's.

As we reached the edge of the drop-off, we let just enough air out of our BC's to make us slightly negatively buoyant. As we swam out from the wall, arching our backs slightly and remaining motionless, we began to sink slowly down the side of the seemingly endless precipice. Below, the wall became even steeper, dipping away at a noticeably inward angle that almost produced a feeling of vertigo as we sank past it, head down, feet extended above us. We stopped on a narrow ledge to spend our remaining bottom time looking at the array of sponges and hydroids that crowded the rock wall. Below us was the deep, deep blue.

Time and again we were struck with a sense of wonder at the majesty before us as we silently slipped down the sheer rock face and gazed into the blue depths below us. Our second dive each day was equally enjoyable — an hour spent in shallower water playing with 20 to 30 pound Nassau groupers as friendly and pugnacious as puppies. Spearing is discouraged on these reefs and the groupers are fed by divers regularly. As we headed down, a crowd of five or six would suddenly converge, waiting for some bits of conch, and if we were lucky, willing to take a scratch or two under the belly.

It was with many good-byes to new friends that we finally loaded our Cessna and took off for a few days of island hopping around the rest of the Bahamas before heading for our next stop — the exciting drop-offs and undersea canyons of Grand Cayman Island.

Cayman's wall diving differs somewhat from that found off Andros: Rather than a continuous undersea cliff along the edge of a reef, there are many different ledges and faces in between peaks and deep ravines. Cayman's deep water is marked by the great black coral forests. Because of a strong conservation movement in Cayman, the black coral is protected and promises to flourish for many years in the future.

We checked in at Bob Soto's Lodge upon arrival and discussed our dive plans with the lodge manager. We were to dive from their regular dive boat, leaving directly from the lodge and always diving in excellent spots no more than 15 to 20 minutes away.

Our dive guide accompanied us on our first dive on Cayman, a



photograph by Al Hornsby

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CARIBBEAN WALLS

memorable dive on a part of the reef known as Even-Old House. The drop-off there is extremely interesting and of striking beauty. Beginning in about 90 feet of water, the bottom drops away steeply, with huge spires of rock and deep canyons marking the edge. As we drifted down between the steep canyon walls, large schools of yellowtail came up to meet us and gorgonians waved from the overhanging ledges.

During the following week, we found that Cayman waters are every bit as beautiful as reputation makes them out to be. We dived a different wall everyday and were never disappointed. Our last dive at Cayman was one of the most striking: a drop-off known as Vertigo Wall.

After only a 20 minute boat ride from the lodge, we were in the water. Reaching the bottom at 90 feet, we swam down through a deep split in the rocks. The chasm was only four or five feet wide and the sides rose 25 to 30 feet above us. It suddenly opened out onto a sheer face, taking our breath away as the depths rushed into our vision. As we continued down, black coral became more and more prolific, and a weird array of sponges and gorgonians seemed to compete for attention. On a ledge between two huge black coral bushes, a giant tube sponge jutted ponderously out from the cliff face. The individual tubes were a foot in diameter, four to five feet long, and glowed a deep reddish purple under my flash. As we paused there, snapping pictures, a school of crevalle jacks appeared from nowhere, swam in close, then disappeared just as quickly.

All too soon, it came time to pack up our equipment and head for the next place on the itinerary: the area where I had first been initiated into the incredible experience of wall diving, the majestic Palancar Reef of Cozumel.

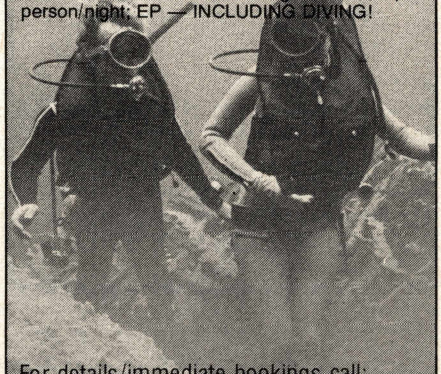
Cozumel's beautiful drop-off is different from any other I have seen in one major aspect — it begins in relatively shallow water, around 45 feet, and drops to a reported 5000 feet.

We slipped over the edge at 50 feet and the great many living organisms crowding the wall made their presence known, moving rhythmically in the slow current. Down, down the steep slope between the walls of a crevice we swam, light and motion falling steadily behind us, deep blue stillness ahead. We drifted on, feeling very secure within our private life systems, very at ease in that deep world. As we rounded a huge boulder on the side of the slope, there was the many-branched bush we had been looking for — black coral. Our Mexican guide was on it, eager to claim his prize.

We stayed in Cozumel for two weeks, enjoying the impressive beauty of the reef by day, the quiet friendliness of the town by night. Palancar presented us a new and different experience each dive, its drop-off extending for miles along the southwest shore of the island. Whether it was squirming up through a 60 foot chimney, gliding down a smooth 80 degree slope on a two knot current, or entering a dark cave to feast our eyes on the most bizarre group of sponges and gorgonians we had ever seen, the diving was at its satisfying best.

When our trip finally ended, the plane ride home was a quiet one, the time filled with thought and deep reflection. We had a feeling of disappointment, of course, to be leaving the beautiful reefs we had been diving for the last month, but mostly a tremendous sense of satisfaction and inner calm that came from having been, and knowing that soon again, we would be heading back down the wall.

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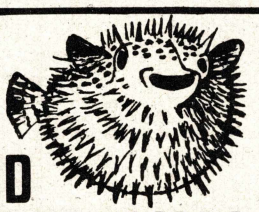
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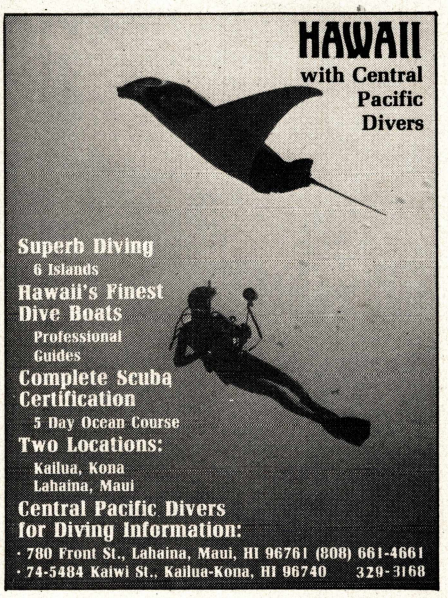
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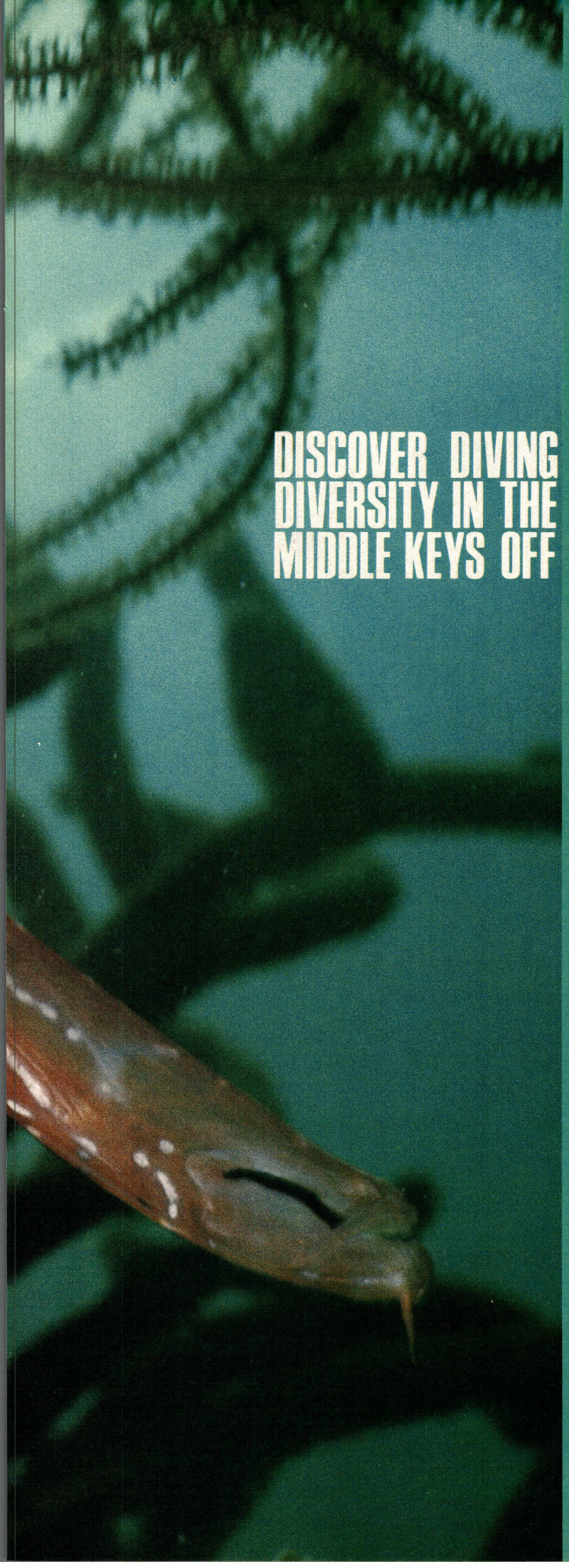
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photograph by Paul J. Tzimoulis

DISCOVER DIVING DIVERSITY IN THE MIDDLE KEYS OFF MARATHON

BY BILL BARADA

Most divers who visit the Florida Keys never get any farther than Key Largo and the John Pennekamp Coral Reef State Park. This is understandable. Pennekamp is not only the world's first and most beautiful underwater park, it is also the most widely publicized and most heavily visited underwater playground in the world. But the lack of attention given to other areas in the keys does these dive spots an injustice. Many have coral reefs that are every bit as beautiful as those of Pennekamp and some offer a diversity of activities both underwater and on land that are not found in Pennekamp or Key Largo.

One such area is Marathon, and divers who are looking for something different to do — or a change in scenery — will do themselves a favor by heading on down into the Middle Keys and discovering what this area has to offer.

The first treat in store for a newcomer is the drive across the Overseas Highway, a narrow, 110 mile-long ribbon of pavement and bridges that takes you island-hopping from Florida City to Key West. It is the world's longest ocean-going highway and it skips across tropical islands, strung out off the tip of Florida like stepping stones between the Atlantic and the Gulf of Mexico. There are more than 200 keys, some no larger than a city lot, and they are scattered over both oceans like mangrove-fringed jewels surrounded by vast expanses of clear, tropical water. Miles of shallow flats extend in all directions with bottoms of sand, sea grass, corals and a wild assortment of colors.

Good diving is available all along the highway, if you know where to go and how to find it. And a sprinkling of dive guide signs in motels, trailer parks and shops tempt you to stop and investigate. The odds are that those who do stop will not be disappointed. But these areas are another story. This piece is about Marathon and is written for divers who resist temptation long enough to get there.



photograph by PD Inc.

Many of Marathon's coral reefs are as beautiful as those of Pennekamp and some offer a greater diversity of activities both above and under water.



photograph by Paul J. Tzimoulis

The second treat, or surprise, for first-time visitors to Marathon is that they will find a bustling, metropolitan community with enough modern conveniences to make people from mainland cities feel right at home. Among these are supermarkets, shopping plazas, large hardware stores, drug stores, garages, gas stations, and hamburger stands. Marathon also supports a municipal airport with regularly scheduled commercial flights and an assortment of hotels, motels, trailer parks and campgrounds which range all the way from exclusive dress-for-dinner yacht clubs to spaces on which you can pitch your own tent. In addition, there are night spots that offer everything from formal dances to jukebox beer joints — and marinas with boat overhaul and repair facilities so advanced that Marathon is a boat service center for most of the Keys. Your choice of eating places runs the gamut from elaborate surroundings, in which you can enjoy exotic adventures in foreign cuisines, to quick, fast-food takeout service.

Tourism is the lifeblood of Marathon's economy and ocean fishing is its backbone. Among the many special services offered to fishermen (and skin divers) is that many restaurants are happy to cook and serve



you a seafood dinner prepared from your own catch.

Diving is also important to Marathon's tourist economy. Virtually all hotels and motels, from the most elaborate to the least expensive, cater to divers, and modern dive shops and guide services offer a diversity of choices to suit almost any need or wish.

This was not always true. A few years ago many of the Marathon dive guides were either commercial spearfishermen, treasure hunters, or fishermen who ran trips for visiting divers as a sideline to pick up a few extra bucks. A customer describing the "service" he received on one of these trips said, "The second splash you heard after the anchor was the dive guide hitting the water — and you never saw him again until he was ready to quit for the day."

A few of these old timers are still around and are popular with local dive clubs and gung-ho spearfishermen who love the casual, independent attitude of veterans who know every nook and cranny of the reefs. But Marathon now has a new breed of professional tourist dive guide whose business is operated entirely to serve the needs of customers. Their base is a modern, completely equipped dive shop with a wide selection of up-to-date gear for either sales or rentals. Most operate in conjunction with a motel or hotel and can arrange accommodations and pick-up services for guests. Most also have several excellent dive boats so they can handle groups of from 4 to 20 divers, and all offer competent instruction ranging from a short introductory resort course to a complete certification course. Although all shops offer more or less the same general services, each has developed a basic program that caters to the specific needs of a particular type of clientele. The result is a choice of services that reflect the wide diversity of interests of American Divers.

An example of this diversity is Hall's Diving Center which is owned and managed by Bob and Linda Brayman. Bob says a substantial part of their business is from families who often use the shop's combined dive instruction and reef trip program as a sort of sophisticated baby-sitting service. Mom and dad drop the kids (from 12 years old on up) off at the shop, then take off to enjoy a day of sight-seeing or fishing while Bob and Linda teach the kids skin diving.

The kids love it. Bob says the youngsters eat up the theoretical and technical instruction (provided by a continuous, professionally-produced video tape). Preliminary dive instruction is given in a pool, then completed in the shallow ocean waters of Sombrero Reef, which may have the most nearly ideal conditions for ocean instruction of any area in the country. The backside of the reef is so shallow that the kids (and their families) can stand on a sand bottom with their heads out of water and be surrounded by living coral communities. Snorkelers can drift on the surface with facemasks only a foot or two above the tips of coral branches and hands almost within touching distance of schools of brilliantly colored reef fish.

The beautiful part of this system is that the baby sitting reef trips with youngsters can be run in conjunction with regular tours for experienced scuba divers. Sombrero's coral reef area is so small, about one-half mile square, that scuba divers and snorkelers can work from the same anchored boat. Experienced divers follow the channels of tongue and groove formations out to deeper water which is only a short swim from the boat.

Hall's is located at the lower end of the Marathon area near the world-famous Seven Mile Bridge and its dive trips are primarily to Sombrero Reef which is only a 15 minute run from the shop. Most of the other full-service dive shops are at the opposite end of the Marathon area and their short-run trips are to a gorgeous coral reef community called Coffin's Patch. Unlike the tongue and groove formations of most coral reefs, Coffin's Patch consists of a cluster of large patch reefs each of which has unique coral communities and marine inhabitants different from all the others. And the shops provide dive services as different as the reefs they visit.

Key Colony Divers, owned and managed by Laurie Russell, caters to family diving in much the same manner as Hall's. The shallow coral reefs on the shoreside of Coffin's Patch are also ideal for snorkeling and Key Colony instructors often find themselves acting as baby sitters by teaching youngsters to snorkel and scuba while mom and dad enjoy more serious diving — or have a free day to spend on their own. Key Colony has a 6 passenger dive boat, and larger boats are available for charter to groups of up to 20 people. A 20 passenger boat will run as far as Key West or Looe Key on full-day charters. Unlike most shops that require a minimum of three or four paying customers, Ms. Russell says she will run with only one customer just for the fun of it.

The Diving Site, owned and managed by Ditmar and Inge Biller, operates a dive boat licensed for 20 passengers and runs daily trips to local reefs, plus special charter trips to Cay Sal for groups of six divers. A compressor is put aboard to provide unlimited air for several days at the island.

Ditmar says, "We do not regiment our customers. They are here to have fun, and we conduct our dive trips to help them enjoy the underwater part of their vacation." He points out that divers who are unfamiliar with the Marathon area are most likely to hit the well marked, easy-to-find reefs which are also the most popular and most crowded. Ditmar claims he can take a group of divers out in local waters for ten days in a row and never hit the same place twice. Most of these, according to Ditmar, are "sleeper" reefs that a visiting diver is unlikely to find.

The Coral Lagoon Resort, owned and managed by Dick Goss, runs a small, six passenger dive boat on local trips and a 20 passenger dive boat he will charter for one day trips to Cay Sal. Dick claims the boat is fast enough to permit six hours of diving time at this far away island on a same-day round trip. Dick also claims he can put divers on local "sleeper" reefs which he has located from an aerial survey.

The Tarpon Lodge now has a dive operation opened by Ron Schilke who dropped us a note to say he moved to the Keys as an escapee from the record-breaking freeze that hit his former shop in Illinois.

Thus, divers visiting the Marathon area have a wide diversity of choices in the type of services they select.

Shop policies and facilities are only a small part of the diving diversity to be found off Marathon, however. An even greater choice is available in the different kinds of underwater activities that can be enjoyed here.

As we stated earlier, some of the other keys coral reefs are every bit as beautiful as those of Pennekamp Park. This is true of both Sombrero Reef and Coffin's Patch, and sight-seeing or photography in these areas can be an exciting and rewarding experience. The tongue and groove formations of Sombrero begin in water as shallow as six inches and drop gradually down to massive communities that tower 15 to 20 feet above the sandy bottom. It is a classic coastal coral reef community consisting of staghorn, elkhorn, brain, star and other corals that grow in fingers pointing into the surge of the open sea. The surge channels between these fingers as well as the coral crevices are alive with the same abundance and variety of colorful reef fishes as are usually found in most of Florida's coral reef communities.

Delta Shoals, a sister reef to Sombrero, has similar gorgeous coral formations and marine life and both reefs are only about 30 feet deep at their maximum. Beyond these modern reefs, however, on the steep slope of the channel brushed by the Gulf Stream, is an older reef of deep water corals. These are gorgeous hard corals and sponges similar to those found on the drop-off, or wall, of most Caribbean islands. Marathon's deep water corals begin at depths of around 50 feet and continue in a solid, sloping wall of corals down to more than 100 feet.

A similar phenomenon exists off Coffin's Patch, and the deep water corals and ledges run for many miles along this section of the Keys. Ditmar Biller claims some of the deep corals off Coffin's Patch as as "big as a house" and basket sponges are so huge two full grown divers can sit inside.

Gorgeous coral formations also exist on the shallow reefs of Coffin's Patch. There are six completely separate and distinct reefs, all within one-half mile of each other, and each has its own dominant species. One reef consists almost entirely of spires of pillar corals that tower more than eight feet above the bottom. Although still spectacularly beautiful, this reef is a living testimonial to the massive desecration caused by commercial coral collecting. Hundreds of the largest and most beautiful pillar spires, some more than 16 feet tall, were yanked out. All that remains of the former cathedral-like formations are the massive bases that jut above the bottom like sawed-off stumps of trees.

This is why Middle Keys dive guides are delighted that all forms of coral collecting, both sport and commercial, have been outlawed and why they will reprimand any diver who suggests that "breaking off a small piece of coral to take home as a souvenir won't hurt anything." Marathon dive guides know better. They saw what kind of damage that nibbling a reef to death for souvenirs can do.

Marathon diving is not restricted to sight-seeing on beautiful coral reefs, however. Activities such as spearfishing, tropical fish collecting, lobster hunting and shell collecting are permitted in these waters and the best spots for many of these activities are far away from the coral communities. Thus, the diversity off Marathon is tremendously expanded by the variety of activities available.

For example, the Middle Keys are a shell collector's idea of paradise. Every dive guide I talked to insisted that conchs are so abundant they can guarantee a visiting diver will find all he can possibly want. They are not talking about small, scrawny conch shells, but giants such as horse and queen conchs. You can not only find and keep a choice selection of these beautiful shells — a friendly Marathon restaurant will clean them and serve you a fresh-caught conch meal prepared from your own catch in any way you wish.

Huge helmet shells are also sometimes plentiful off Marathon but they move in and out and finding them is a matter of hitting the area at the right time. Bob Brayman says that when the helmets are in you can usually find all you want. This is verified by Ditmar Biller who said he has counted as many as a dozen in one small area.

The best shelling areas are on the shallow grass beds and they are usually hunted by drifting over the surface. Virtually all Caribbean species of seashells exist off Marathon, not only in the grass beds, but under bridges, on the deep reef, and according to Bob Braymen, you can load a goody bag with coweries by walking along the shore at night.

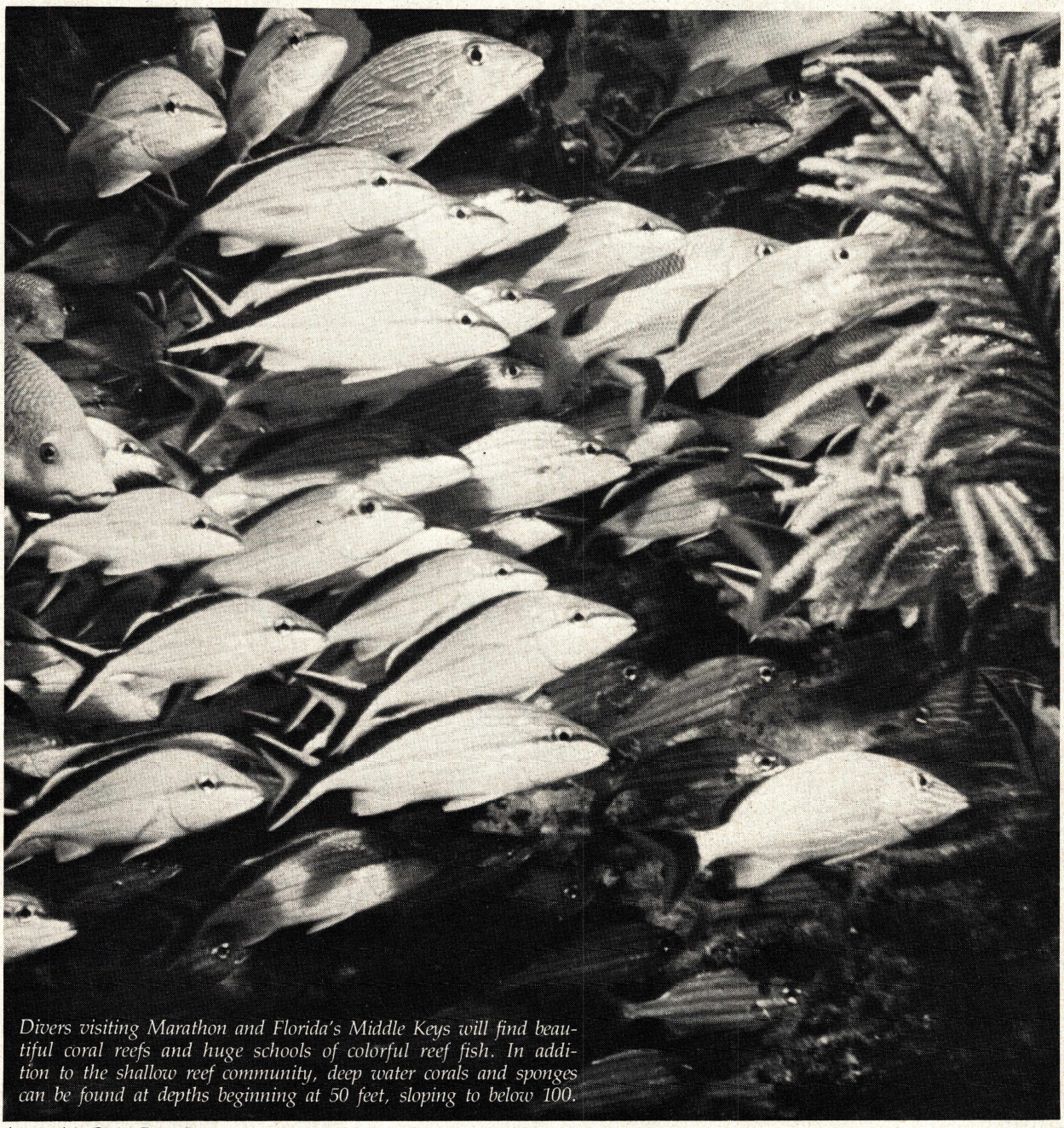
Tropical fish collecting is also a popular activity off Marathon. Reef fish such as baby angels, butterflies and rock beauties can be found among the corals, but these are also plentiful among rubble patches beneath bridges, around jetties and seawalls and similar places. According to Bob Brayman, the most exciting tropicals such as sea horses, baby barracuda and octopus are found in mangrove flats.

Although spearfishing is only popular with a small minority of divers visiting Marathon, all dive shops are happy to include fish hunting trips for customers who request it. Here again, the best spearfishing areas and the largest fish are not the shallow coral reefs. The biggest and most sought after fish such as large grouper, hogfish, and amberjack are found in deep water ledges near the edge of the Gulf Stream. Bob Brayman says the biggest fish he has seen are off Delta Shoals. Ray Fecher, former owner of Key Colony Divers, says the best spearfishing spot he has found is near the G-Marker Buoy off Bahia Honda. Ditmar Biller also says the deep water reefs are best for spearfishing. He deplores the change in Florida law which now permits spearing close to shore and beneath bridges which he says encourages novices to shoot beautiful species such as angels, spadefish and grunts. Dick Goss also says he has some excellent spearfishing areas located — and all Marathon guides claim they can put you into great fishing grounds but it is up to the individual diver to land them.

Marathon is also a lobster hunting paradise and you can find them hiding in rubble and slots under the bridges, in blowouts (underwater sink holes), in the shallow back country on the gulf side of the highway, on sleeper reefs, deep reefs, patch reefs, coral reefs, and even in depressions and stray rocky areas on grass flats. Knowing where to go and how to get there is important, however, and the dive guides can drop you right on top of a good bug diving area.

As with virtually all areas in the Caribbean, the best time of year to visit Marathon is in the summer and fall. Not only is the weather better and the water warmer, prices are lower and accommodations easier to obtain than in the height of the winter tourist season. In winter, from December until April, the snow birds from the frozen north invade the keys. Highways are jammed with traffic, hotels, motels and trailer parks are booked months and years in advance, tourist facilities are overloaded, and the price of everything from hotel rooms to hamburgers skyrockets. The worst time of year for diving is in spring because strong winds and bad weather may keep you grounded for days and weeks at a time.

We have described only a few of the many types of activities and entertainment available in Marathon. There are many others and, as we stated earlier, if you are looking for something new and different try driving across the Overseas Highway and sample the diving diversity available in the Middle Keys.



Divers visiting Marathon and Florida's Middle Keys will find beautiful coral reefs and huge schools of colorful reef fish. In addition to the shallow reef community, deep water corals and sponges can be found at depths beginning at 50 feet, sloping to below 100.

photograph by Paul J. Tzimoulis

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*Prices per person double occupancy; airfare not included.



BLUE REEF SCUBA PACKAGES

Blue Reef Watersports in St. Maarten, Netherlands Antilles, has announced seven day/six night scuba diving packages available through June, 1979.

Included in the Scuba Safari are two full tanks per diver per day, all dive gear, accommodations at beachfront apartments, and breakfast and dinner daily. Lunch and beverages are included on all-day expeditions. Divers will stay at Mary's Boon, Aambeeld Guest House, Pelican Key Beach Villas or Friendly Island Beach Homes.

Expeditions are scheduled to begin on the following Sundays: November 19, December 3 and 17, January 7 and 21, February 4 and 18, March 4 and 18, April 1 and 15, May 6 and 20, June 3 and 17.

Cost is $540 per person until December 15 and $595 per person from December 15 to April 15, based on double occupancy and excluding air fare. Single supplement is $90 in the winter season, $60 in the summer. Deduct $150 for non-divers sharing rooms with divers.

In addition to the week-long Scuba Safari, Blue Reef also offers instruction for non-divers, daily dive trips and snorkeling trips. Two-hour dive trips are $25 per dive ($20 for repeat dives). Day trips to offshore islands for experienced divers are $50 per person with a minimum of four. Two-hour snorkeling trips to reefs off Pelican Rock are $10

For information or reservations for the dive packages contact: Lane Boudreaux or Steve Tihanyi at Blue Reef Watersports, Box 350, Philipsburg, St. Maarten, N.A.

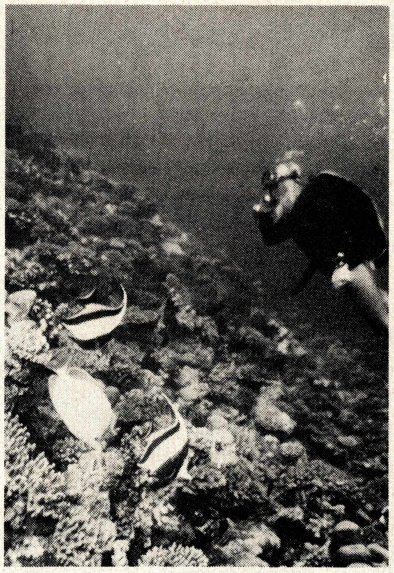
SEE & SEA TO MALDIVES/SRI LANKA

One of the world's most exotic dive destinations is now available, with See and Sea Travel's two-week trips to the Maldive Islands and Sri Lanka (formerly Ceylon).

Located off the southern tip of India, these islands offer incredible reefs and marine life for the dive portion of the program, and a complex, awesome history for the land-touring days.

In the Maldives, See and Sea's clients will spend ten days aboard a 75 foot motor/sailer, cruising and diving this "land of a thousand atolls." Lush reefs, dramatic drop-offs and species of fish found only in the Indian Ocean are highlights.

At the conclusion of the cruise each group will fly to Sri Lanka for a five-day tour in air-conditioned



limousines. Each group will visit the mountainous tea country, Sigiriya, the ancient ruins of Polonnaruwa, the Temple of the Tooth and a variety of other sites on the island. Cost of the two-week program is $1,450 plus air fare.

See and Sea will operate Maldive/Sri Lanka groups each August, September, March and April. For information, contact: See and Sea Travel, Inc., 680 Beach Street, # 340, San Francisco, CA 94109.



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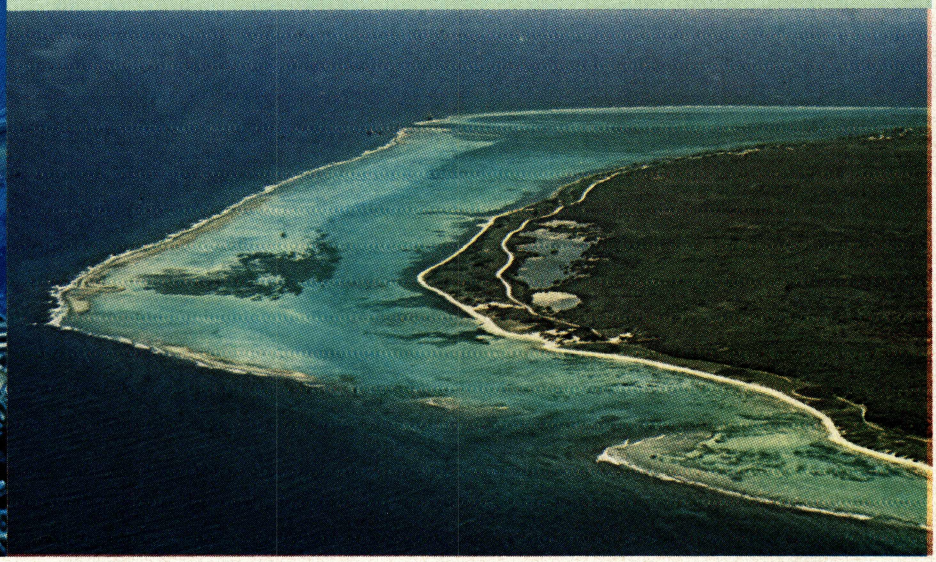
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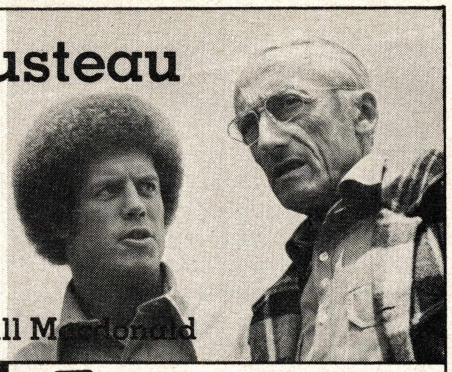
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BAY TRAVEL EXPANDS PROGRAM

Bay Travel Diving Adventures of Corona del Mar, California, has announced a new series of dive trips to the Caribbean, Fiji, Kona and Micronesia.

Departing every Friday and Saturday evening, Bay Travel will offer dive trips to the Cayman Islands, Bahamas, Honduras, Bonaire and the British Virgins.

Another new program features the best of Fiji diving: Astrolabe Reef, Mana Island and Taveuni Island with extensions available in Tahiti. Departures are available through UTA French Airlines.

Bay Travel also has an exclusive arrangement with Hawaiian Divers. Under new ownership, Hawaiian Divers offers the best facilities in the Pacific. Trips are available for three or seven nights with a variety of accommodations. Complete certification programs are available for the nondiver.

A trip to Truk Lagoon will take place September 1 to September 14, 1978. Cost is $1,645 with flights from Los Angeles. The escort will be Warner Younis.

For information, contact Bay Travel Diving Adventures, 2435 E. Coast Highway, Corona del Mar, California 92625.

ADVANCED U/W MEDICINE COURSE

The second advanced course on the medicine and physiology of sport scuba diving will be held on the islands of Bonaire and Curacao in the Netherlands Antilles, December 2-10, 1978. The course has been devised by Dr. Jefferson Davis and structured to concentrate on all aspects of sport scuba diving.

The staff, one of the finest ever assembled, will consist of Peter Bennett, Ph.D., Duke University Medical Center; David Elliott, M.D., Ph.D., London, England; Eric Kindwall, M.D., Milwaukee, Wisconsin and Jefferson Davis, M.D., San Antonio, Texas. Dr. Davis will be the course director.

All are recognized authorities in the field of dive medicine and devote much of their time and efforts toward the sport. Peter Bennett and David Elliott authored *The Physiology and Medicine of Diving*.

In addition to the academic seminar, a complete dive program has been arranged in Bonaire. Helen Turcotte of Medical Seminars, Inc., will handle travel arrangements.

For a brochure and academic schedule, contact: Medical Seminars, Inc., P.O. Box 530441, Miami Shores, FL 33153.



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South Seas Aquatics has a new custom, 28 foot Radon dive boat. Coast Guard certified to carry 14 passengers, it is powered by a 270hp Cumming diesel. The new boat cruises at 22 knots, enabling it to cover any and all of the dive spots around Oahu. Now the visiting diver can sample Hawaiian diving at its best. South Seas Aquatics also has a new van to take advantage of the best shore areas for beginners' scuba tours.



Ken Taylor, owner-manager of South Seas Aquatics, is a 16 year chartering veteran. For information, contact South Seas Aquatics, Honolulu, HI 96814.

AQUAVENTURES' KNIFE SHARPENING SERVICE

Captain Don Stewart of Aquaventure/Habitat on Bonaire, in the Netherlands Antilles, has good news for all underwater knife wielders. During a recent trip to Miami, Captain Don discovered and purchased a bench grinder which is now installed in the new Habitat dive shop.

"If a diver carries a knife he might as well have it sharp," he says.

The knife sharpening service is free and available to all divers.

NEW OFFICERS AT DAN'S DIVE SHOP

In a transfer of ownership, Michael C. Owens has become president while partner Charles Rolison will continue as vice-president/general manager of charter operations for Dan's Dive Shop, Honolulu, Hawaii. In the recent move, former president Carl Seyfer sold majority interest in the corporation, leaving Owens and Rolison sole stockholders. Both have been with the firm since 1973. Dan's is a full-service professional dive shop. In addition to charter operations, the shop maintains an airfill station; contracts scuba courses for the University of Hawaii and U.S. Army; and rents, repairs and sells a full-line of quality dive equipment and related accessories.

Dan's is a member of the Hawaii Visitors Bureau, Hawaii Association of Dive Shop Owners and the National Association of Scuba Diving Schools. For information, contact: Dan's Dive Shop, 1382 Makaloa St., Honolulu, HI 96814.



Dive the Barrier Reef in Honduras.

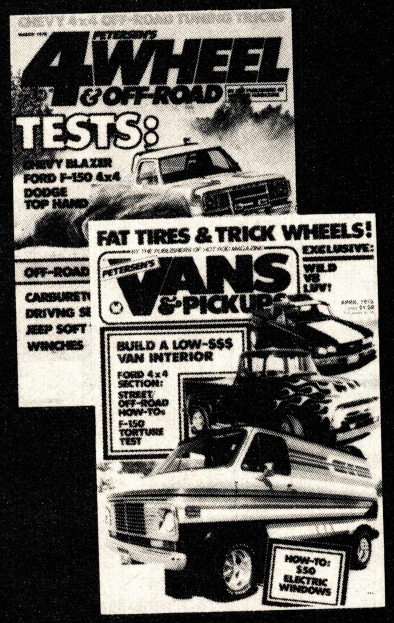
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SEA OF CORTEZ STUDY GROUP

Recent scientific studies in the Gulf of California (Sea of Cortez) have indicated that the crown of thorns starfish, *Acanthaster planci*, has reproduced to significant numbers to warrant a new investigation of the problem. In January of 1978, divers in the gulf made an important discovery: the crown of thorns starfish was observed eating sea fans, octocorals, in lieu of their typical diet of hard corals, hexacorals. Since much information is needed on *A. planci*, the ecology and density of this spiny starfish will be the primary focus of a new 1979 expedition. You can be a part of this exploratory trip.

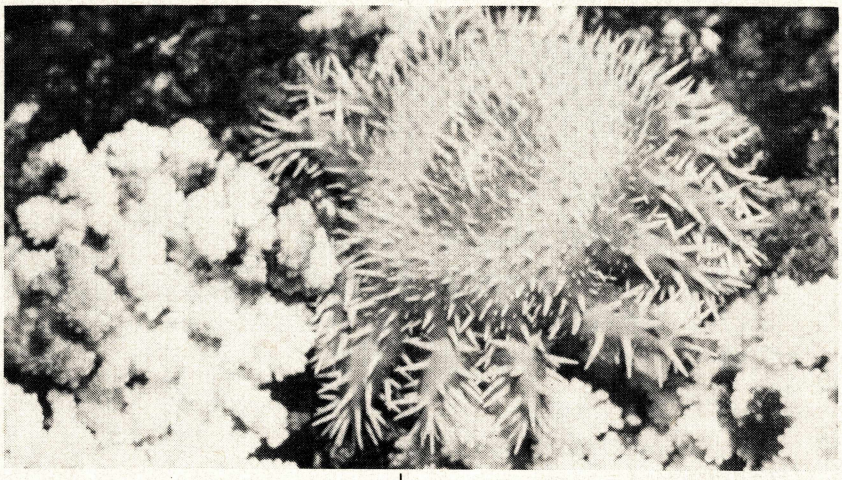
The new diving-ecology study will take place January 7-14, 1979, and will include scientists from the Mexican Fisheries, Smithsonian Marine Laboratory in Panama, the U.S. Department of Interior, and other invertebrate zoologists. The organizations involved with their respective programs will be: NAUI (Biomarine Seminar with Special Marine Environmental Certification), Dominican College (two units of college credit), Baja Expeditions, Inc. (will host the trip).

To participate next January, you must register with Baja Expeditions, Inc., Box 3725, San Diego, CA 92103 (714) 297-0506.

Twenty-five divers and non-divers will be accepted on a first-come basis. Total cost, including round trip air fare from San Diego to La Paz, is $695. High school and college students will receive a 10 percent discount.

Baja Expeditions' new ship, the *Explorador*, is a converted 125 foot oceanographic research vessel. It will accommodate 25 passengers. There are 14 staterooms with hot and cold water, 4 showers and restrooms, a new galley, dining salon with library and stereo music, and a marine laboratory with seawater tanks, microscopes, etc. In addition, there are two compressors with the main Ingersol Rand 10-T2, able to fill a tank in three minutes. There is also a new boarding and underwater ladder system.

The ship will provide tanks,



backpacks, weights and belts. A full wetsuit is needed since water temperatures will be in the mid-60's.

In summary, a participating diver may be able to gain: 1) A bio-marine seminar with some outstanding coral scientists. 2) A NAUI special certificate in marine environments. 3) Diving experience in pristine habitats, studying the coral-eating crown of thorns starfish, sharks, giant groupers, and a wide variety of Panamic shells.

Tentative schedule for the trip is as follows: On January 7, 1979 fly from San Diego to La Paz to board the *Explorador*. Then head immediately for the southern tip of Isla Cerralvo to view the crown of thorns starfish eating the coral heads. The succeeding days will be spent diving in and around the Islands of Espiritu Santos, Las Animas, San Jose, San Francisco, and Rocca el Solitario. This dive area is one of the most exciting in the western hemisphere.

GRENADA DIVE RESORT

Club Sojourns Nautiques, Grenada, West Indies, in co-operation with the Silver Sands Hotel and Sand Dollar cruises, has announced its summer program.

Catering to all divers, non-divers and families, the club offers two excellent wreck dives, many coral reef drop-offs, and shallow snorkeling. Wetsuits are not required, but divers should bring their own masks, fins, snorkels, regulators, and BC's if possible.

The club has two complete dive shops on the island and two dive boats. All dive guides and instructors are NAUI certified. A resort scuba certification program, with all equipment provided, is also available. For information, contact: C. LeRoy French, Grenada Yacht Services, Grenada, West Indies.

U/W MEDICINE IN BONAIRE

The Tenth International Physicians Underwater Medicine Program has been scheduled for November 25-December 3, at the Hotel Bonaire and the Curacao Plaza.

The academic program is approved by the AMA through the Undersea Medical Society, for 25 Category I Continuing Medical Education Credits.

In more than 25 classroom hours, illustrated lecture sessions will cover the history of dive medicine, a review of dive physiology, physical standards for divers, effects of elevated partial pressures, mechanical effects of pressure change, decompression theory, decompression sickness, near-drowning, poisonous and venomous marine life, sham treatments, case discussions and special topics seminars.

Three authorities in the field will serve as instructors for the seminar. John M. Alexander, M.D., assistant clinical professor of medicine at UCLA and director of the Commercial Diving Center, will be the program director. Also included are Richard L. Bell, Ph.D., NAUI instructor and a professor at the University of California and chairman of the biochemical engineering department; and Vincent O'Hara, M.D., F.A.C.S., chief of surgery at Fresno Veterans Hospital, assistant clinical professor of surgery at the University of California at San Francisco and also a NAUI instructor.

In addition to the medical seminar, Lee Turcotte's Atlantis Safaris, of Miami Shores, Florida, has arranged a complete dive program through Captain Don's Aquaventure Bonaire, situated within the hotel property. Various reef trips will be scheduled each day during nonlecture hours. Night dives have also been arranged. Also, a course will be available for physicians and their families, who wish to become certified divers, as well as a resort course which will permit new divers to dive with an instructor.

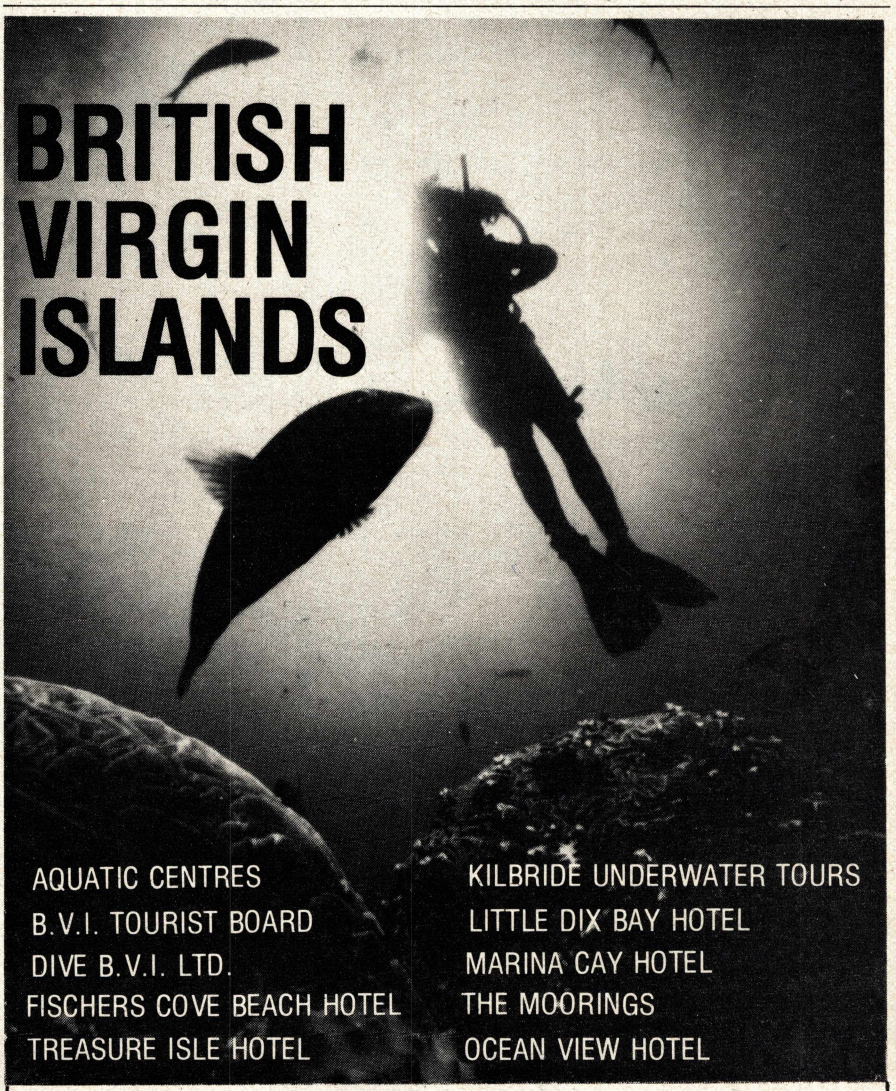
Travel and dive arrangements are being handled through Lee Turcotte's Atlantis Safaris, Miami Shores, Florida.

For a brochure and further information, contact PUMP, P.O. Box 530344, Miami, FL 33153.

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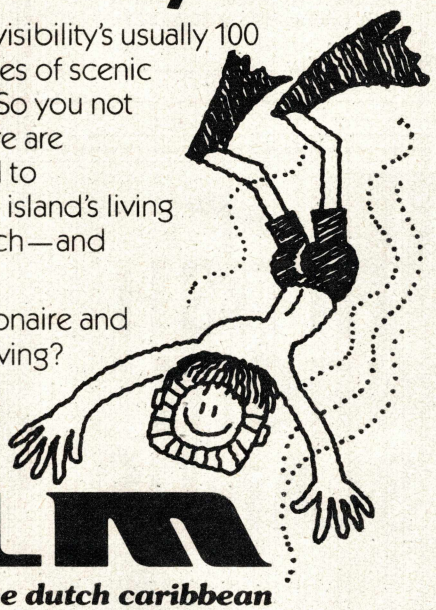
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The *Point Upolu* and her sister ship the *Ka Lae* are new additions to the Hawaiian Divers fleet of dive boats. Both are 27 foot Radons, designed and custom built for diving.

The boats are powered by dependable diesels and are licensed to carry 12 divers each.



For information, contact: Hawaiian Divers, P.O. Box 572, Kailua-Kona, HI 96740.

CAYMAN PIRATE'S WEEK

The Cayman Islands will celebrate their second annual Pirate's Week from November 4 to 13. The event was a big hit in 1977 and a host of new diver-oriented activities are scheduled for '78.

In addition to the popular subsea treasure hunt, there will be an underwater photo contest organized by Sefton's Undersea Photo Supply of Grand Cayman.

First prize, for the best roll of slide or print film shot in Cayman waters during the period of Pirate's Week, will be a complimentary five-day stay for two at a popular Grand Cayman dive resort. The winner will return on the date of his or her choice to enjoy a free holiday at Spanish Bay Reef Resort and the new Spanish Bay Villas Condominiums for Divers, now being constructed. Second place winner will receive a new Nikonos III camera.

Entrants must be visitors to the islands during Pirate's Week in November, and may submit up to two rolls of Kodacolor print or Ektachrome slide film for processing and judging. Scuba divers must be certified and all entrants must preregister at Sefton's Undersea Photo Supply where their film will be coded for identification.

For information, write (via Air Mail) to: Sefton's Undersea Photo Supply, Box 1200, Grand Cayman, British West Indies.

V.I. DIVERS LAUNCHES SUNDANCE

V.I. Divers Ltd. of St. Croix has recently launched a new custom dive boat. The *Sundance* was designed by the firm's president, Bret Gilliam, and constructed by Harris Yachts of New Hampshire. The $60,000 craft is 40 feet long, with a 13 foot beam. Powered by a GM6-71 diesel, she is capable of speeds up to 18 knots. *Sundance* is licensed by the U.S. Coast Guard for 23 passengers and is equipped with twin VHF radios, a 15 mile radar, and lifesaving and emergency gear.



Gilliam is one of the islands' few captains to be licensed by the Coast Guard as a 100 ton Ocean Operator in addition to being certified as an instructor by NAUI, PADI, and NASDS. His boat has many conveniences not to be found on most Caribbean dive boats.

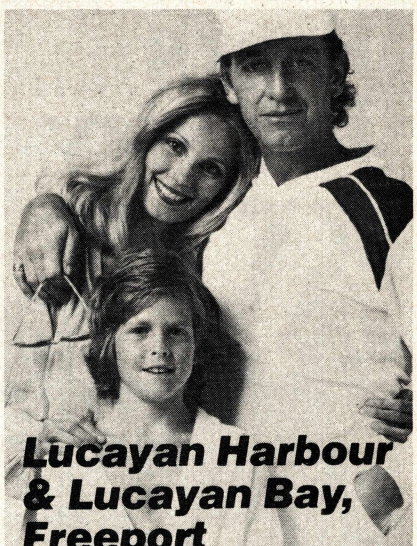
The boat is crewed by NAUI/-PADI instructors and makes daily trips to all of St. Croix's best sites with a weekly dive planned to the wreck of the *Rhone*.

V.I. Divers Ltd. is the Virgin Islands' largest dive operation with a full time staff of eight and a complete retail store facility. An eight day/seven night dive package including 13 dives and hotel accommodations is $325.

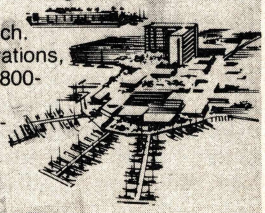
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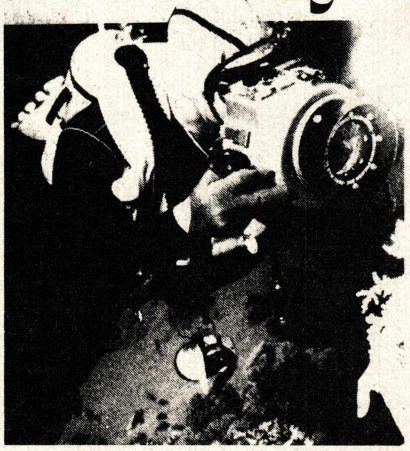


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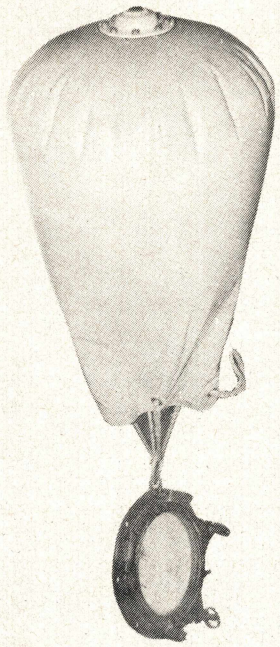
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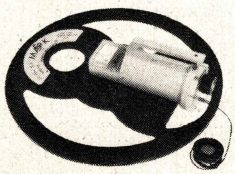
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GATES JOINS WALLIN

Wallin Divestore of San Carlos, Calif., has appointed Vikki Gates to its team of diver/photographers.

Originally from Ventura, California, Vikki learned to dive while living in Alaska. She also spent two and a half years in Mexico attending the University of the Americas, during which time she dived the Yucatan Peninsula.



The basic certification course which Vikki will teach at Wallin Divestore includes the NAUI open water sport diving course and includes 15 ocean dives. Vikki obtained her B.A. in film production at San Francisco State University and is also a professional photographer.

Wallin Divestore is located at 1656-58 El Camino Real, San Carlos, CA.

AQUAFOT — HUGYFOT

Aquafot Corp., Portland, Maine, is now the sole U.S. distributor for Hugyfot underwater photographic products, Zurich, Switzerland.

Aquafot president, Jim Cooper, said that his goal is to introduce the best in European design to U/W photographers in the U.S. Aquafot also designs products to interface Hugyfot equipment with U.S. photographic equipment.

Hugyfot, founded in 1953 by diver/-engineer Rene Hugenschmidt, has developed a great number of housings, most notably the Hasselblad series, and later a housing for the Bolex GBM, a cast aluminum housing for Arriflex 16mm and 35mm movie cameras, as well as housings for Super 8 and TV cameras.

For information regarding Hugyfot and related U/W photographic equipment, contact: Aquafot, 987 Westbrook St., Portland, Maine 04102.

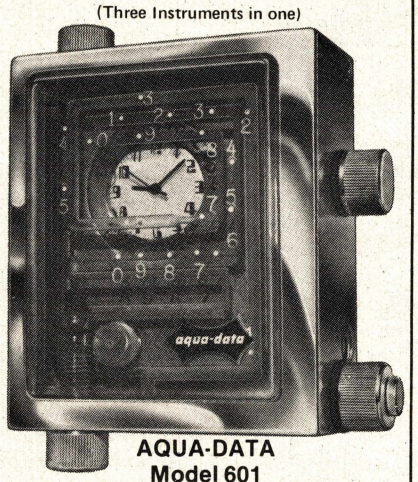
FLORIDA LOBSTERS TAGGED

The Florida Marine Research Laboratory is asking sport divers for help in a lobster tagging program being conducted in the Florida Keys. From April, 1978 through March, 1979, about 20,000 lobsters of all sizes will be tagged with a yellow spaghetti tag inserted between the carapace and tail.

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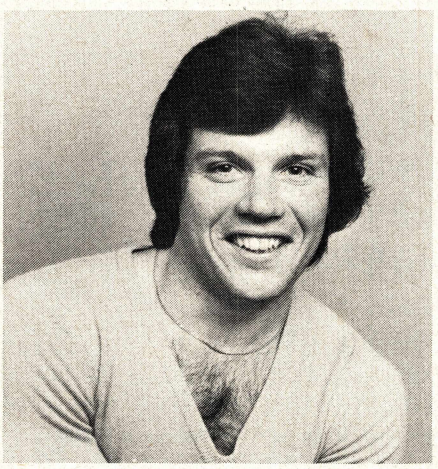
City_____ State _____ Zip_____

Sport divers are asked to take *all* tagged lobsters (including shorts and egg-bearing females) to the Marine Research Field Station, 11400 Overseas Highway, Marathon, Florida. Or, telephone, toll free: 1-800/432-2873.

Legal lobsters will be returned to the diver and the Florida Marine Patrol will permit possession of *tagged* illegal lobsters long enough to transport them to the Marine Lab.

CDA'S CAPTAIN CZAK

Coastal Diving Academy in Bay Shore, New York, recently added a new Captain from within the ranks. Commercial diving instructor, Alan Czak, has completed U.S. Coast Guard licensing for passenger carry.



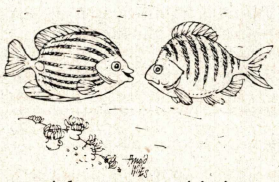
Under the tutelage of Captain Charles Hersey, Alan has had the rare opportunity to learn his new trade from one of the best. He will combine his diving and educational skills with his new found maritime experience to continue his service to CDA.

BOSTON'S MARITIME JOURNAL

A newly formed group of Greater Bostonians have announced the publication of a monthly maritime journal called Norlantis.

The tabloid-style newspaper features articles on a wide range of maritime topics, covering the entire Northeastern section of the U. S. Typical articles concern dive locations, shipwrecks, historical artifacts, U/W photography and human interest stories. The first issue appeared at dive shops and newsstands in March. The journal already has a circulation of 10,000.

For information, contact: Norlantis, P.O. Box 3175, Saxonville Station, MA 01701. Telephone (617) 877-8681.



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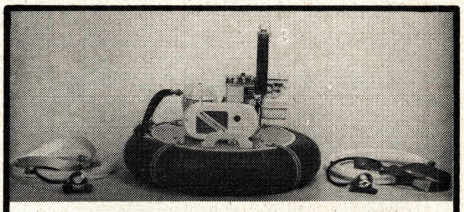
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DIVER SAFETY DAYS

BY LARRY BURDEN

"Hey, what's that funny looking flag over there?"

"I don't know, let's scoot over there and check it out!"

How many times a year does this happen? Unsuspecting, uneducated boaters decide to check out a float or a boat drifting with a red and white divers flag. Without realizing it, they come very close to injuring a diver in the vicinity.

The divers flag, red with a white diagonal stripe, was designed to warn boaters that a diver is in the area and that the boater should keep his distance and reduce his speed.

The divers flag has been around for over 15 years and boating has been a big part and also a big problem in safe diving. Every year, hundreds of new divers take to the open water fresh out of their scuba courses, having plenty of faith in their flag. But after their first close call with an uneducated boater, they either call it quits or quit using the flag.

What can the diver do? That is the question that is flashing through everybody's mind. The answer is simple: We *can* educate the boaters ourselves.

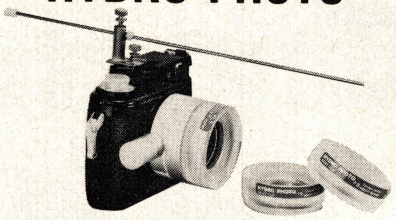
Last year in Moncton, New Brunswick, Canada, a project was started called Diver Safety Days. It was originated by the Poseidon Scuba Club and backed by every scuba club in the province of New Brunswick through the New Brunswick Underwater Council. June 2, 3, and 4 were picked because in early June the boaters and divers hit the water. The project was designed to educate the boaters as to what the divers flag is. Display booths were set up in various shopping malls throughout the province. Divers flags were hung everywhere possible and buttons and flyers were handed out by the clubs to the public. Slides were shown, gear was displayed, and the boaters were educated.

The three day project was an outstanding success! Numerous boaters complimented the divers on the displays and were pleased that the divers had taken the effort to inform them about the divers flag. The project was not confined to shopping malls alone. Television appearances of divers talking about the flag were shown on local stations. A commercial advertising the divers flag was made and also shown on local TV.

The efforts of Diver Safety Days in both 1977 and 1978, proved to be a fantastic success, because close calls have been substantially reduced.

Remember that Diver Safety Days is not just three days in June but every day of the year. Every diver's support is needed in this project. For more infor-

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mation on Diver Safety Days contact: Larry Burden, Poseidon Scuba Club, 51 Ellerdale Ave., Moncton, New Brunswick, Canada EIA 3M6.

GRAVER RECEIVES EDUCATION AWARD

Dennis Graver, PADI's National Training Director, has been awarded the Los Angeles County Underwater Instructor Association Education Award for 1977, "for new developments in underwater instruction."

Dennis has supported the Los Angeles County Underwater Instructor Certification Courses and Advanced Diver Programs for many years and has provided general support to the L.A. County Underwater Unit. In addition to these efforts, the Los Angeles County instructors also recognized his contributions to the sport through the National Scuba Exam series in SKIN DIVER Magazine, which he has authored since January, 1975; his numerous articles on diving; and his book for experienced divers, *Sport Diving A to Z*. Dennis has also contributed greatly to diver education through employment with two national diver certification agencies since 1972.

In expressing gratitude for the award, Dennis recognized the quality of the Los Angeles County dive training programs and its long history in the sport. L.A. County was one of the very first to establish standards and issue certifications, conducting the first Instructor Certification Course in 1955. "I feel honored," he said, "that an organization with such a fine tradition and integrity has selected me for this award."

TREASURE FINDERS

(Continued from Page 61)

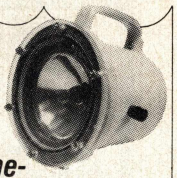
"O. & C. R. R." The Treasuremaster had revealed a relic of the old Oregon & California Railroad, a pioneer route constructed in 1868 and absorbed by Southern Pacific in 1886. This, alone, was a $40 to $50 discovery.

Naturally, this led to a quick return to the water. Other discoveries were made: an ornate cast iron base marked "Gilbert Clock Co.," a cast iron toy car resembling a circa 1915 sedan, fancy brass gaslight fittings, a lamp burner, even a stand-up model telephone.

The team arrived at some conclusions. Excitedly, they decided the new metal detectors must be lucky. Beyond that, the performance was most pleasing. Though the Surfmaster seems a better unit for one who would like a single instrument for above and below water, the Treasuremaster Amphibian would be best for the ardent diver.

These improved metal detectors are definitely new items. The prices, $169.50 for the Amphibian, and $179.50 for the Surfmaster are also new — lower, more within the price range of the average diver.

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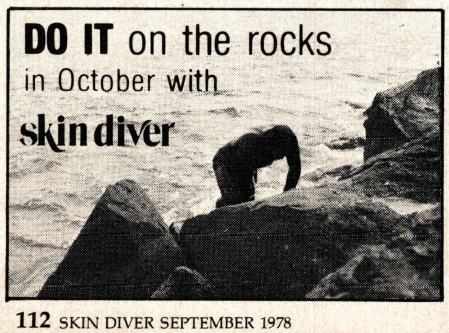
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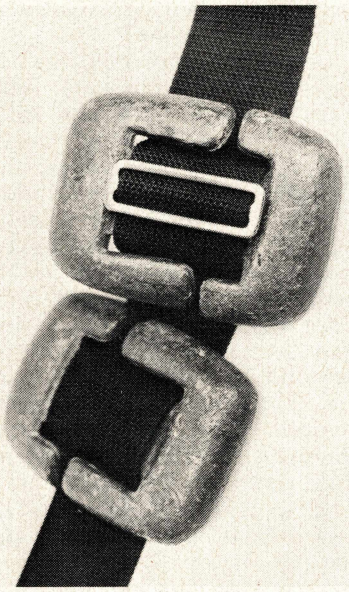
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WEIGHT PROBLEM

(Continued from Page 69)

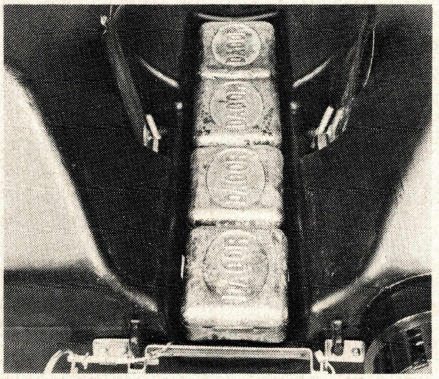
If you carry your weights with you, you could easily exceed the 44 pound airline limit. In addition, few resorts outside of the U.S. carry a large stock of specialized weights such as BB's, ball shot, disc weights, or block weights.



Slotted weights shown with a non-slip clip.

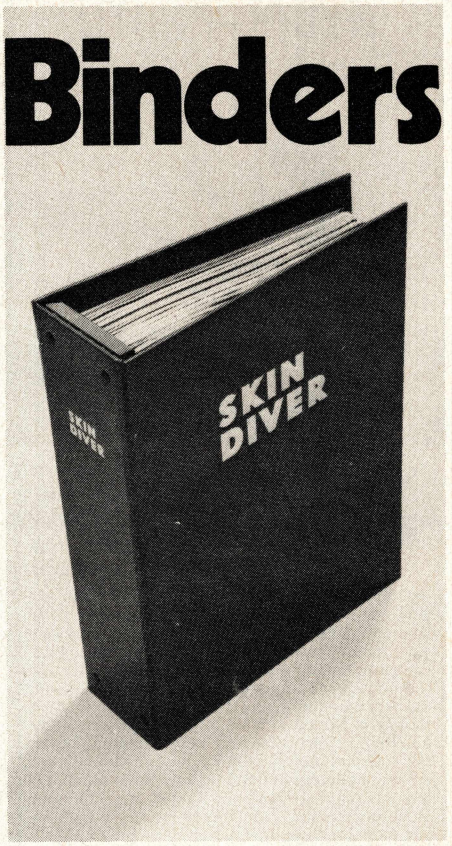
So, unless your specific unit can take cylinder or two to three pound weights, your only option may be the weightbelt. Even in the U.S., each manufacturer has its weak sales regions, and you might find that the only dive shop within 200 miles doesn't carry your brand. So, to stay on the safe side, no matter what you buy, keep in touch with the weightbelt.

Each of these weight systems, with the exception of the weightbelt, has been developed within the past five or six years. Each was designed to do a specific job or to overcome a problem. All these systems are good, but none is perfect. It is reasonable to expect that additional weight systems will be designed in the years to come as manufacturers search for the perfect means of regulating diver buoyancy.



Dacor's Nautilus with special block weights.

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Let the Spirit of Adventure take you to the other side of Paradise...

Hawaii has always been known as 'Paradise,' from the mountain tops to the sea. But until you experience the thrill of diving down on out of the way spots, you only know one side of paradise.

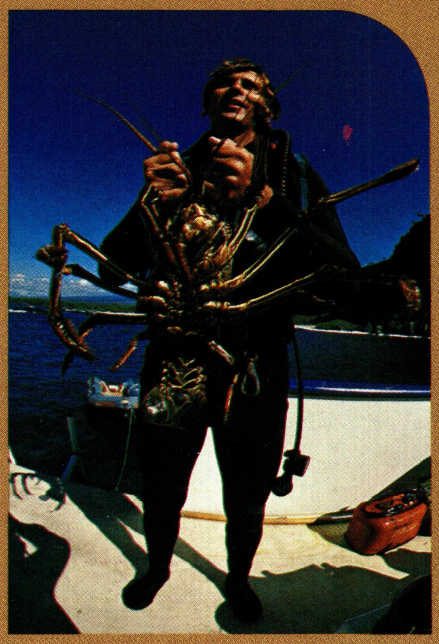
The Spirit of Adventure is a luxury diving cruise boat, designed and built as a live-aboard, like you've never seen. And for a single price you can spend three days, a week, or two weeks with the finest crew in Hawaii, for a relaxing dive adventure you will never forget.

Superb accommodations on board; personal sized staterooms with oversized beds, fresh water showers, 110 volt electrical outlets, a caring crew and fine food, complete this exceptional dive/cruise package.

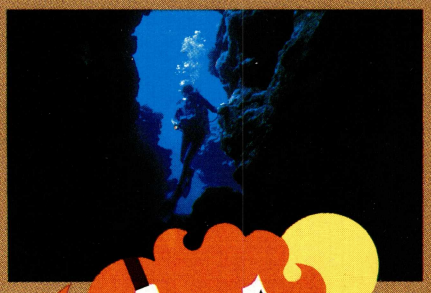
Comfort and relaxation are a big part of what we offer. The diving is wonderful and the spots have something for most every level of diving skill. Night dives, too! Join us now on the Spirit of Adventure and experience the other side of paradise.













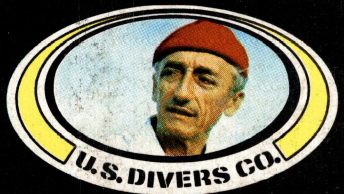
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Jacques-Yves Cousteau
Chairman of the Board

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